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The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

Published Every Thursday TULSA, OKLAHOMA, AUGUST 26, 1926 $6.00 a Year

The International Derrick & Equipment Company was~

1st *to Perfect the Structural* [illegible]*rick*— a structure of calculated strength, designed by engineers who know what is expected of it in the field.

1st *to Safeguard the Operator's Derrick Investment* by a galvanizing process that renders all International "Ideco" products *permanently* rust-resisting.

1st *to Introduce the "Reinforced" Derrick.* Though widely imitated, "Ideco's" reinforcing principle is still the simplest, strongest, most easily attached and dismantled of them all.

1st *to Introduce Galvanized Steel Safety Platforms* and other improvements which have made International "Ideco" products the standard by which all others are compared. And *first* to provide the oil industry with service and supply local to every important field.

The International Derrick & Equipment Co.

Columbus, Ohio — Torrance, Cal.

DALLAS DENVER TULSA SHREVEPORT HOUSTON CASPER BAKERSFIELD
OIL CITY WEWOKA SMACKOVER EL DORADO, KANSAS TONKAWA
WICHITA FALLS CORSICANA MEXIA NEW YORK LOS ANGELES
SEMINOLE DRUMRIGHT OKEMAH AMARILLO PANHANDLE

California National Supply Co.—Distributors in California

The largest company devoted exclusively to the manufacture of steel (galvanized) equipment for the oil, gas and artesian industries.

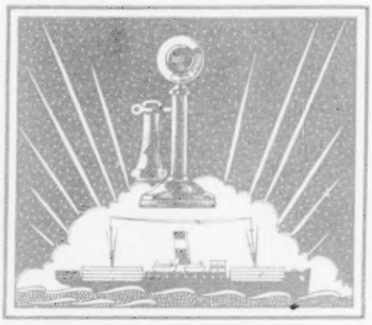
INTERNATIONAL STEEL IDECO DERRICKS (GALVANIZED)

Advertisers' Index on Page 25 Table of Contents on Page 26

TIME WAS SHORT—Long Distance *bought*

$12,000

WORTH OF LUMBER



A LUMBER and mill-work concern of Bridgeport, Connecticut, needed a quantity of spruce lumber, of a kind then very scarce. They received a tip that a desirable cargo was about to land in Boston. How could they get to it before it was sold? . . . A long distance call got the lumber just in time and it was shipped immediately—two hundred thousand feet; value, $12,000.

MEN, in an ever-increasing range of businesses, are learning the economy of Long Distance. In buying. In selling. In making difficult appointments. Where something must be done now or not at all. In those numerous emergencies where expense must be cut, where more miles must be covered and more people interviewed. Every day American business men handle thousands of transactions by Long Distance. Adjustments and purchases are made. Numberless business details are attended to. And a call is often the most economical as well as the quickest way to get a thing done.

It may be that your concern has not tested and learned the usefulness of the telephone to distant cities and towns. Do you think of it only when someone is wanted in your own city or near at hand? The greater the distance, the greater the service! The telephone can often save you a tiresome trip around many states, just as it constantly saves you walks over town.

Has a special study ever been made to learn the ways in which Long Distance can serve your business? Our local Commercial Department will gladly make such a study free. In the interim, what distant man or concern would it be to your advantage to talk with? The instrument on your desk will connect you regardless of the distance, now. . . . *Number, please?*

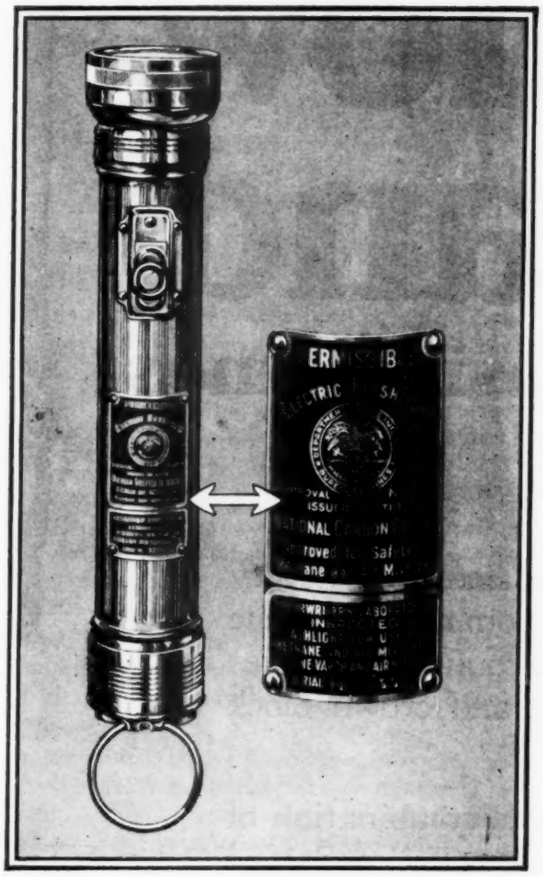
BELL LONG DISTANCE SERVICE

Augus

The

XUM

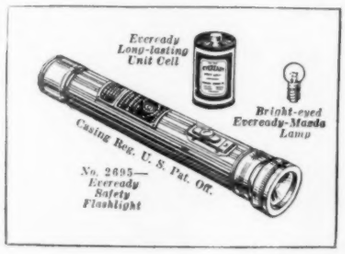
A THOUSAND THINGS MAY HAPPEN IN THE DARK



Eveready Unit Cells fit and improve all makes of flashlights. They insure brighter light and longer battery life. Keep an extra set on hand. Especially designed Eveready-Mazda Lamps, the bright eyes of the flashlights, likewise last longer.

New Eveready protects life and property

THIS new Eveready Safety Flashlight was especially designed for use around oil and gas plants, mines, etc.—wherever there are explosive vapors and gases. It has been officially approved for such use by the Bureau of Mines and the Underwriters' Laboratories.


Eveready Long-lasting Unit Cell
Bright-eyed Eveready-Mazda Lamp
Casing Reg. U. S. Pat. Off.
No. 2695— Eveready Safety Flashlight

The main feature of this light is a spring-mounted lamp. Should the lamp glass be shattered (which is hardly possible, because of the rugged, projecting lens-ring and the extra-heavy lens), the circuit is instantly opened and the filament cannot ignite vapors or gases in the surrounding atmosphere.

In all other respects, the light is a standard Eveready 3-cell, Long-range Focusing Spotlight with all the famous Eveready features—hinged metal ring-hanger, safety-lock switch, etc. It will pay you to adopt this light as standard equipment.

Manufactured and guaranteed by
NATIONAL CARBON CO., INC.
New York San Francisco
Canadian National Carbon Co., Limited
Toronto, Ontario

EVEREADY FLASHLIGHTS & BATTERIES
-they last longer

L 6 L S. O S I
O 3 5 2

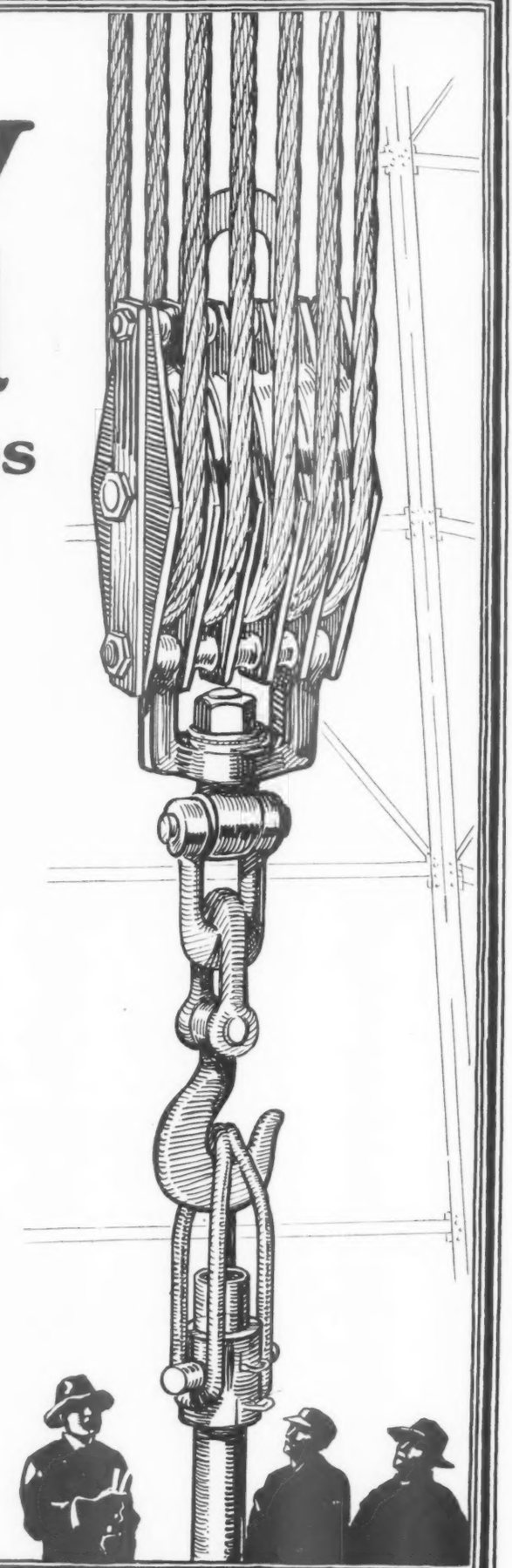
469638
260295

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the postoffice at Tulsa, Okla., under the Act of March 3, 1879.

XUM

Yellow Strand

Rotary Casing Lines



It's strength you need in a Rotary Line—strength combined with the ability to bend around the sheaves of casing block and crown block without injury.

It is this valuable combination of qualities that causes Yellow Strand Rotary Lines to last longer and be so economical.

The wire for Yellow Strand is drawn to our special specifications in Europe and imported by us. No wonder Yellow Strand Rotary Lines are so good!

Ask for Catalog K-2

BRODERICK & BASCOM ROPE CO.
St. Louis, Mo.

Branches: New York City and Seattle, Wash.
Factories: St. Louis, Mo., and Seattle, Wash.

K355

If poor bearings have ever tied up *your* shop—

TROUBLE again. Bill tells the foreman, the foreman tells the superintendent. Meanwhile the wheels of your plant stop running just at a time when production should go forward quickly.

Curious how a single bearing can tie up work, and cause expensive delays. It may have been made from poor metal, a scrap mixture that somebody bought because it was cheap. Or it may be good, clean babbitt, but carrying too heavy a load.

There is one science in the making of honest babbitt—from virgin metals, free from dross, uniformly pure. And there is another in the correct use of that babbitt—using a high-speed, heavy-duty metal in one place, and a medium duty, less expensive metal in another.

When you buy Eagle Babbitts—Eagle Dreadnaught *High-Speed*, Outlasta *General Service*, and Standard Number Four—you get purity and uniformity backed by scientific methods of production.

And in the unusual Eagle Babbitt Service—recommendation of the correct babbitts and solders for each individual function in your plant, based on an actual study in your shops by Eagle Babbitt Specialists—you get a guarantee of bearing metal efficiency.

This service is without charge. May we send a free booklet and full information?

The EAGLE-PICHER LEAD COMPANY
Chicago · Joplin · Cincinnati

EAGLE BABBITT SERVICE

Producers of lead and allied products · Eleven Plants · Branches in all principal cities

HOPE
VERTICAL
GAS ENGINES

3 and 4 CYLINDERS 60 to 250 H.P.

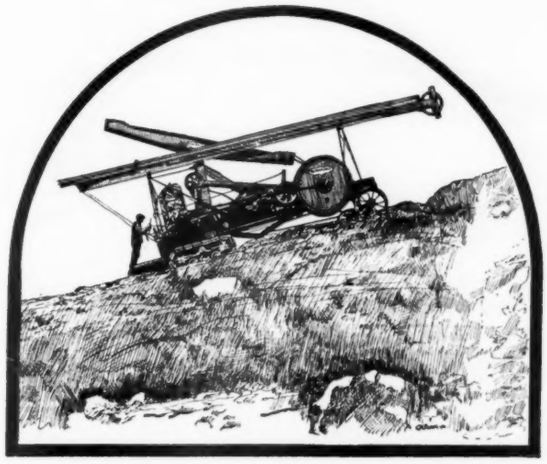
The purchase of a Hope Vertical Gas Engine is a sound investment in a dependable power supply. The greatest values covered by the Hope price do not reveal themselves in any superficial comparisons—they are made manifest in the after years of smooth, trouble-free performance.

More than 20 years of intimate association with the natural gas industries have given Hope engineers an understanding of gas power development and application which is reflected in the character and economy of Hope Gas Engines.

Tell us the power you need, and let us send prices and specifications.

HOPE ENGINEERING & SUPPLY COMPANY
MT. VERNON, OHIO, U.S.A.

HOPE ENGINEERS & CONTRACTORS IN NATURAL GAS AND OIL HOPE



Star Portable Drilling Machines

Steam or Gasoline Power

are made for

Cleaning Out and New Drilling

Up to 3000 Feet

Learn How These Stars Are Cutting Drilling Costs

The Star Drilling Machine Company

Akron, Ohio, U. S. A.

Branches at
Chanute, Kansas; Wichita Falls, Texas; Long Beach, California, and Portland, Oregon.

Export Office
2 Rector St., New York City, U. S. A.

THE STAR DRILLING MACHINE CO.
Akron, Ohio.

Without obligation please send complete information about Star Drilling Machines made for the following work:

☐Cleaning Out. ☐New Drilling. Depth

☐Gasoline Power. ☐Steam Power.

Name

Street

City State

Oil & Gas Journal

DU PONT

WHEN YOU SEE
THE DU PONT CAN . . .

. . . you can be assured that the product which it contains has been intelligently formulated on the basis of the large technical and analytical resources of the du Pont laboratories, and will give you a satisfactory result, when properly applied to a surface for which it is adapted.

and

WHEN YOU SEE
THE DU PONT MAN . . .

. . . you will find that he is equipped to discuss intelligently, and from all angles, the subject of finishes in the petroleum industry. The du Pont man, furthermore, will place at your disposal the du Pont Petroleum Finishing Service, which will make constructive analyses of your finishing needs and will recommend complete paint systems, based upon your individual needs.

DU PONT

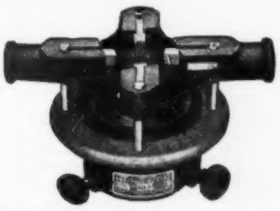
For further information about du Pont products and the du Pont Petroleum Finishing Service, write on your letterhead to E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Tulsa, Okla., or Chicago, Ill.

The No. 1A is the same as the No. 1 except that it is equipped with a ratchet for work where space is restricted.

No. 1A Nye Toledo Type Pipe Threader, complete ..... $12.00 net
West of Rocky Mountains $13.50

NYE—*The Die Man*

Pipe Tool Maker to the American Plumber and Steamfitter



The rugged construction and few working parts account for the simplicity and durability of these Nye Toledo Type models. They do the work easily and efficiently.

No. 1 Nye Toledo Type Threader, complete ..... $9.60 net
West of Rocky Mountains $10.80

New Type Self-Locking Vises

No. 00 ..... $2.82 net
No. 10 ..... 3.34 net
No. 20 ..... 5.00 net
No. 30 ..... 7.33 net

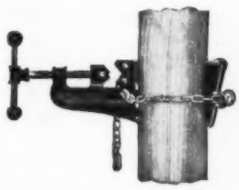
I AM always glad to get orders from new customers but I like still better to get new orders from old friends,—and, therefore, I am offering herewith a new addition to the Nye line.

This isn't just a business I am running,—it is a "cause." Since I began making Pipe Tools, the plumbers of America have forgotten practically all of their swear words,—and I need your orders in the support of this "cause."

All we claim for this new Nye No. 2 Stock (Toledo Type) is that it is the best tool of its kind in the world,—our natural modesty prevents our claiming more than this,—and if we said less we would not be telling the truth. This tool will be sent on absolute free trial to any reputable dealer. When ordering mention your jobber's name.

Yours for a Nobler and Better Life,—or at least an Easier one.

HARRY G. NYE.

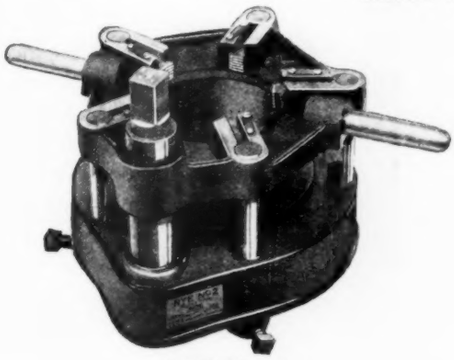


Nye New Style Chain Vice

Wedge and saddle made in one unit so that parts cannot be lost. Vise complete with 40-in chain ..... $6.18 net

Nye Barnes Pipe Cutters

No. 1 ..... $ 2.25 net
No. 2 ..... 3.00 "
No. 3 ..... 5.00 "
No. 4 ..... 10.00 "
No. 5 ..... 15.00 "
No. 6 ..... 20.00 "



NYE No. 2
(Toledo Type)
Geared Threading Device
Improved
Capacity 2½ Inches to 4 Inches Inclusive
Net Price, Complete $50.00
West of Rocky Mountains $55.00

Free Trial—Absolutely Guaranteed

THE NYE TOOL & MACHINE WORKS
Manufacturers of High Grade Pipe Tools
4120-30 Fullerton Avenue
CHICAGO, ILLINOIS

Nye Saunders Pipe Cutters

No. 1 ..... $ 1.80 net
No. 2 ..... 2.70 "
No. 3 ..... 6.60 "
No. 4 ..... 10.80 "
No. 5 ..... 16.80 "

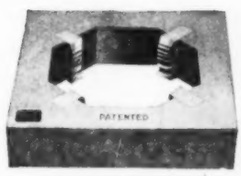
Nye Toledo Type Chasers

Also fits Nos. 1 and 2 Toledo Type Die Stocks.

Each set is guaranteed in every particular. Will cut much easier than other similar dies.

No. 1, 1" to 1½" ..... $ .75 per set net
No. 1, 2" ..... 1.25 per set net
No. 2, 2½" to 4" ..... 3.60 per set net

Nye thin blade cutter wheel, made to fit all standard makes of pipe cutters, and guaranteed against breakage in use. Made both in smooth and knurled edge.



Nye Solid Die

Nye Dies are made of finest materials obtainable for the purpose. They are hardened and tempered in oil. Will quickly pay for themselves in the actual saving of labor. Made in both right and left hand.

XUM

WE INVITE YOUR INQUIRIES

on technical subjects

pertaining to

MEASUREMENT and CONTROL

and CONSERVATION and SAFETY

PROBLEMS

Every member of our engineering staff is especially fitted by years of actual experience and association with the Oil and Gas Industries, to capably handle any problem which you may submit for solution. Feel free to call upon us, at any time, without obligation.

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Liquid Safety Valve and companion line of Tank safety and conservation Equipment.

Westcott Orifice Meters.

Metric Ironcase Meters, high and low pressure, for field and domestic uses.

Metric Ironcase Drilling Well Meters.

Meriam Manometers and companion line of Meriam Products.

MacDonald 2 Lt. 3 Diaphragm Meters, equipped with 4 purging cocks for laboratory and charcoal testing.

Chaplin - Fulton High and Low Pressure Regulators.

Davis Supersensitive Relief Valve and Casing Head Regulator.

The technical man is important to the Oil and Gas Industries. Through his broad knowledge of operating situations, he is able to suggest economies that mean substantial savings to operators, and the promotion of a more ideal condition throughout the Industry.

Savings, in time, labor and money, are important to you; consult our engineering department the next time you are faced with a particularly intricate problem regarding the operation of your measuring and control devices, or your conservation and safety equipment.

WESTCOTT & GREIS, Inc.

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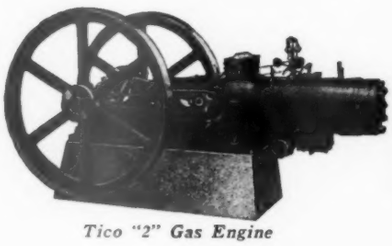
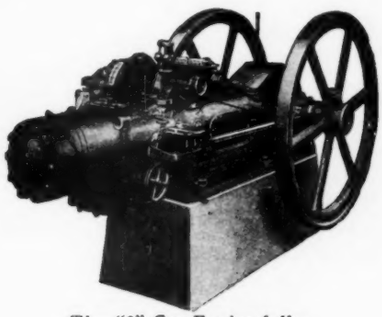


Tico "2" Gas Engine



Tico "2" Gas Engine fully enclosed

Tico "2" Gas Engine equipped with Titusville Reversible Clutch

A Few of the Savings You Can Effect with the Tico Gas Engine Before and After You Top the Sand !

Typical of the actual dollars and cents savings you can effect on each Tico Engine you install for drilling and then leaving the Engine on the block for pumping the well,—as actually demontrated in Kansas last month are:

480 Barrels of fuel oil delivered @ $2 per barrel	$960.00
480 Barrels of lost production in skidding steam engine ahead and also pulling your steam engine when you put gas engine to pumping well	$800.00
Saving on water	$ 35.00
Skidding steam engine ahead and pulling steam engine when gas engine is installed	$ 35.00

Estimate the number of wells you have or contemplate having on your leases—then multiply this number by the total average saving you can effect by installing the Tico Engine on the start and you will have an item that you cannot afford to overlook.

Ask the Continental man for further particulars.

The TITUSVILLE IRON WORKS Co.
TITUSVILLE ~ PENNA.

Titusville Acme Boilers
Single and Twin Steam Drilling Engines
Tico Gas Engines
Band Wheel and Geared Powers

SOLE DISTRIBUTORS

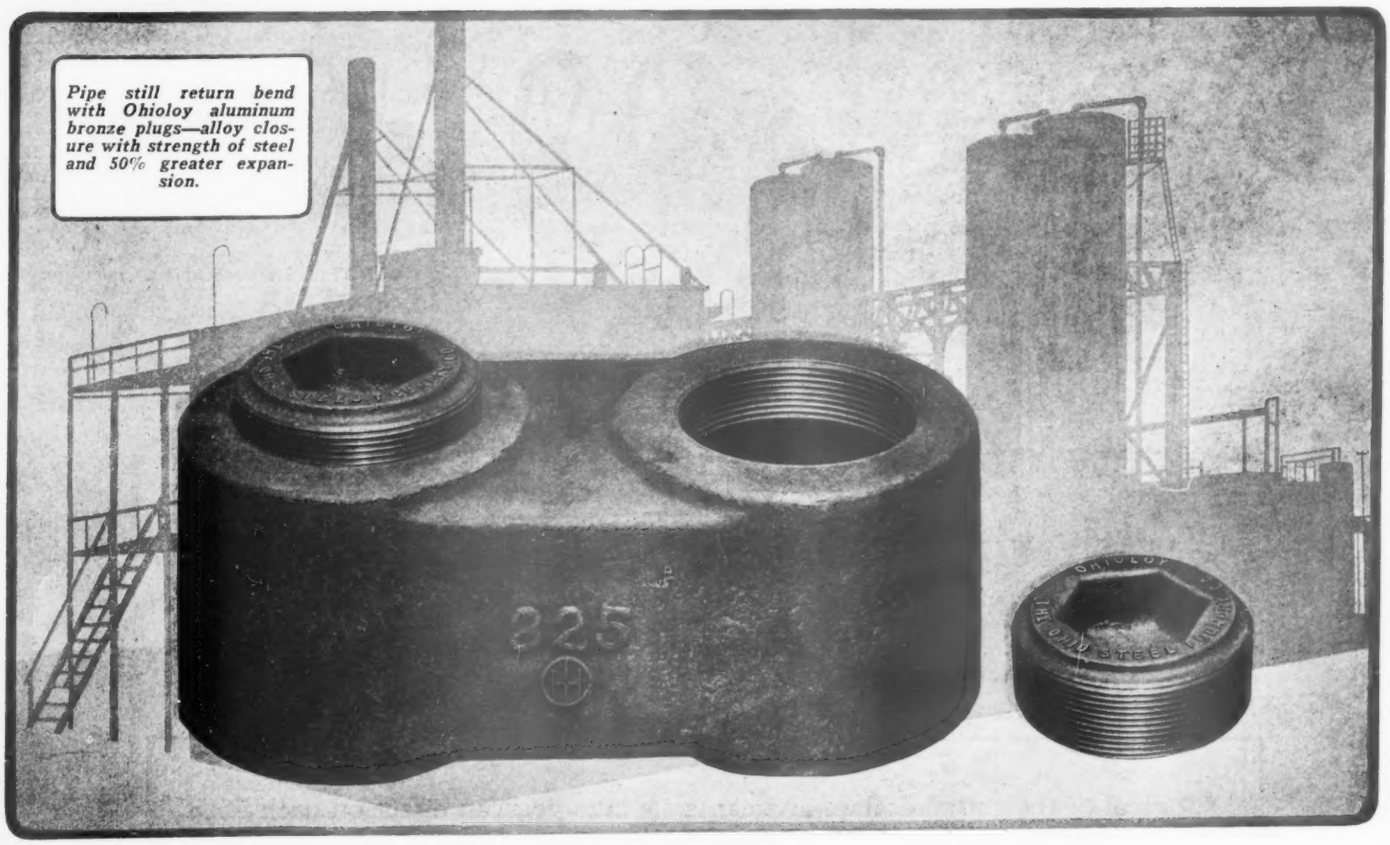
The CONTINENTAL SUPPLY COMPANY

For THE CONTINENTAL
No. 2 RECTOR STREET

Export WELL SUPPLY CO.,
NEW YORK CITY, N. Y.

Titusville Acme Rotaries
Acme Swivels and Speed Draw Works
High Pressure Boilers
Crown Blocks
Slush Pumps

RUGGED ~ ENDURING


Pipe still return bend with Ohioloy aluminum bronze plugs—alloy closure with strength of steel and 50% greater expansion.
325
OHIOLOY

Hi-Steel Return Bends

Standard Equipment for Pipe Stills

Hi-Steel Return Bends are made of the finest electric steel annealed, machined, and tested at our Springfield works.

Special equipment and concentrated effort in every detail of their manufacture have made them in demand wherever high temperatures and pressures are used.

They are designed for hot oil working pressures up to 900 lbs. and 900° F.

They are made in any size, shape or quantity for any operating conditions and are backed by the reputation of The Ohio Steel Foundry Company.

See that this Trade Mark is in the Vital Spot of your Pressure Units

We have patterns for all diameters of tubing and on practically any center required. Eliminate pattern costs by consulting us.

Tell us pressure and temperature, center to center dimension, O. D. of tube and we will suggest design and quote prices.

The Ohio Steel Foundry Co.

Springfield, Ohio

Pioneers in Return Bends for Pipe Stills

SALES OFFICES:

Houston—Harrisburg Pipe & Pipe Bending Co., of Texas
Chicago—Peoples Gas Bldg.
New York—75 West St.
Philadelphia—22 So. 15th St.
Los Angeles—4920 Loma Vista Ave.

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Springfield
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The Ultimate Test of Valve Value

Long SATISFACTORY Service with Minimum Maintenance Expense

Bronze Double Disc Gate Valve

Nothing better identifies a high quality valve than its ability to render a definite service for the longest period of time in the most efficient manner.

Bronze Wedge Disc Gate Valve

LUNKENHEIMER
BRONZE
GATE VALVES

are everywhere recognized as long life valves, embodying all the requisites essential for economical and efficient service. Once installed they require very little attention; they remain tight under severe conditions, and maintenance expense is negligible.

The complete line offers a type and size to meet any requirement, facilitating standardizing on "Lunkenheimer" wherever Bronze Gate Valves are used. The economies resulting from such standardization will prove a source of satisfaction to every valve user.

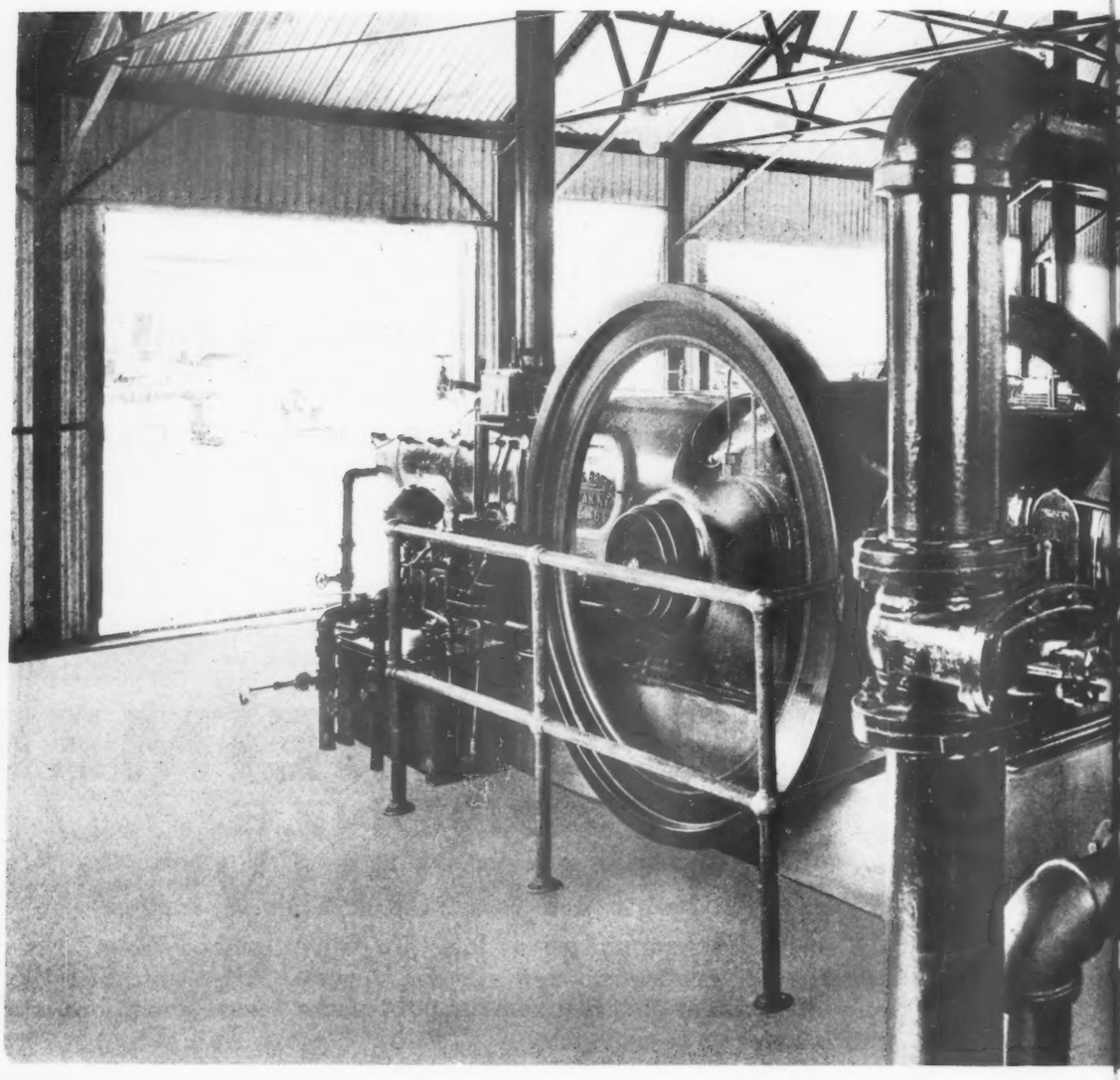
Lunkenheimer Distributors, located in all industrial centers, carry complete stocks and render prompt service. Call on them for your requirements.

Detailed information is contained in Folder F 550 JA.
Fill in and mail the coupon for your copy. No obligation.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

THE LUNKENHEIMER CO.
Gentlemen:—Please send me, without obligation, a copy of your Bronze Gate Valve Folder F 550 JA
P. O. Box 876, Cincinnati, Ohio
Name
Firm
Position
Address

11012-28-91



Clark Bros. Co. OLEAN, N.Y.

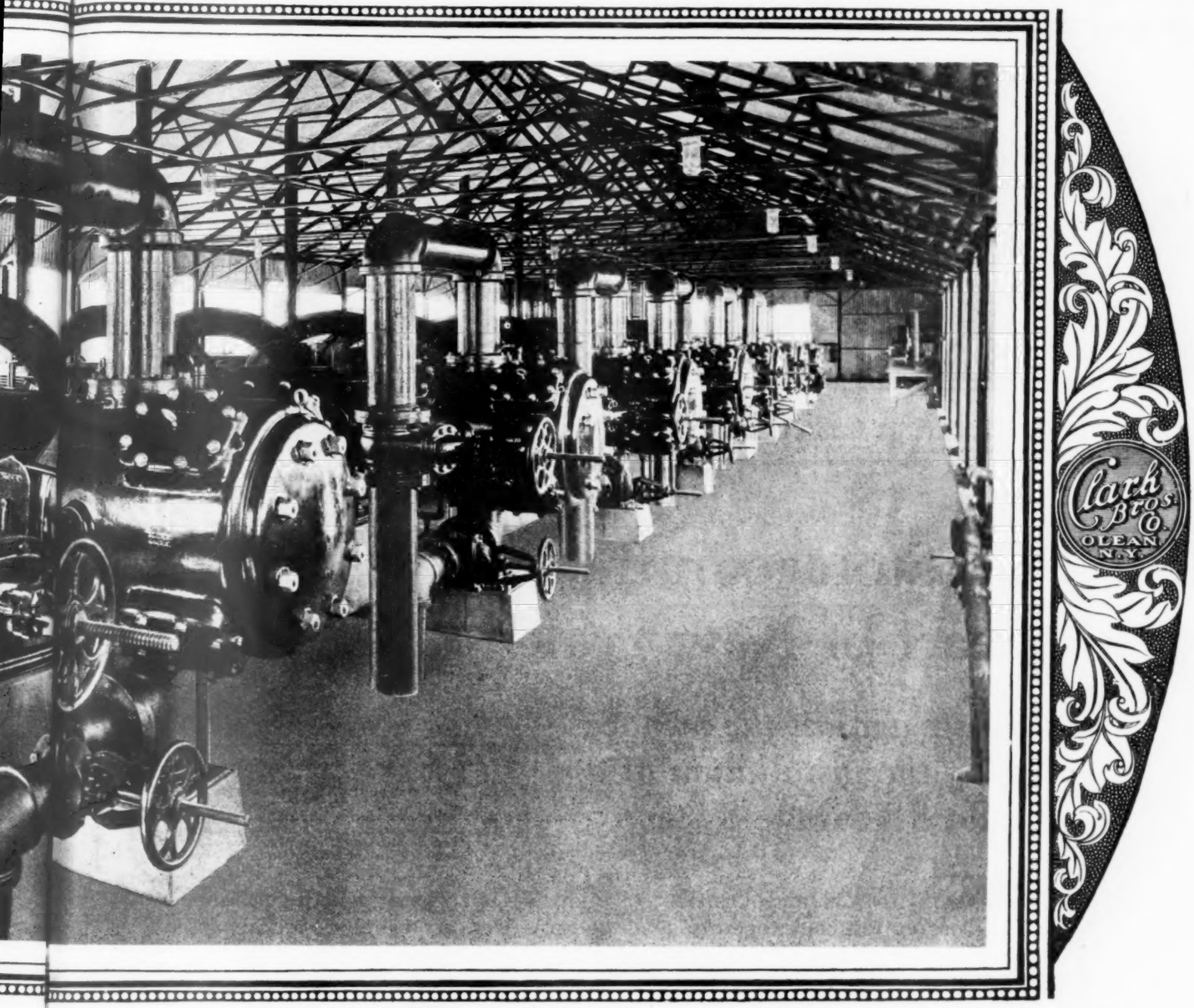
The Compress

WHOSE ENDURING PERFORMANC

GAS ENGINEERING & CONST.
COMPANY
125 W. First St.
Tulsa, Okla.

Now—after years of faithful service, Clark Compressors find themselves on the threshold of a golden period of prestige, performance and achievement.
Golden, not merely in the sense that they are money-makers for their owners and operators,—and they have unquestionably proved their ability to operate *continuously at a profit.* But in the glow that surrounds their name and traditions, these ultra-modern, young-old Compressors

CLARK CO



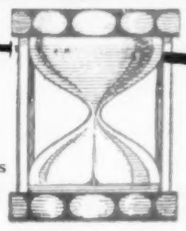
sors of the Hour

CHAS WON LASTING FAME

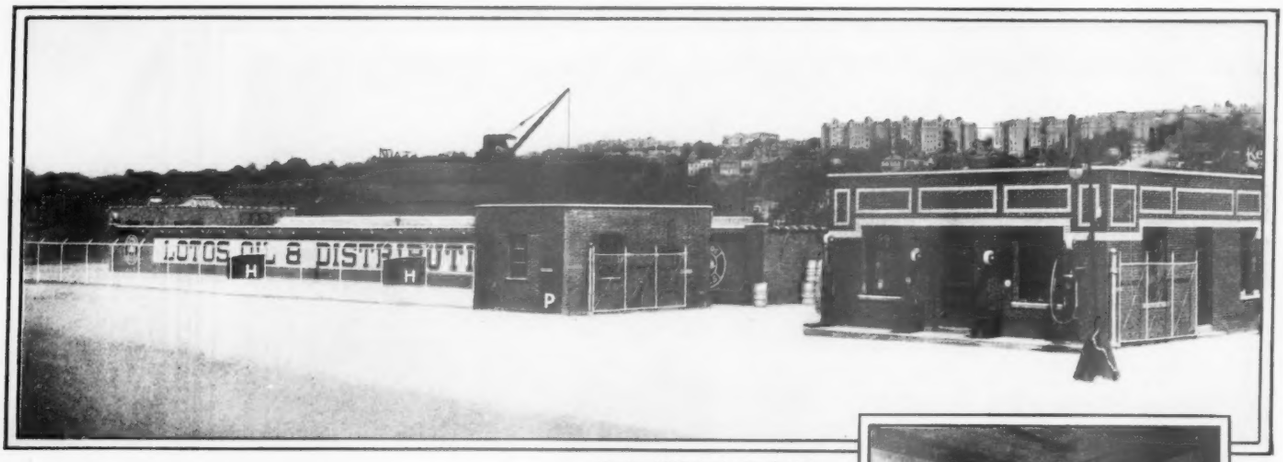
have created an atmosphere that spells CLARK and Clark performance.
Clarks are the one make of Compressors about which it can be truthfully said that pride of ownership matches pride of manufacture.

CLARK BROS. COMPANY
Olean, N. Y.
SALES and SERVICE

SMITH-BOOTH-USHER COMPANY
228 S. Central Ave., Los Angeles
50 Fremont St., San Francisco

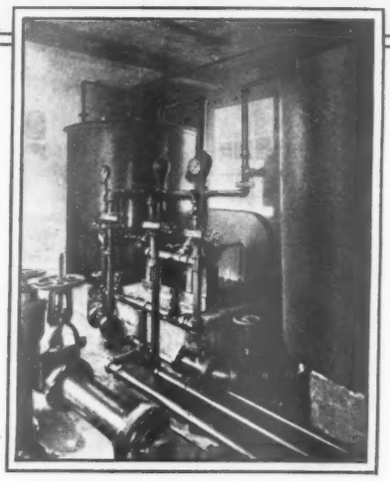


MPRESSORS



Kenlon-Michels Co., Engineers

Twelve 31,500-gallon tanks of gasoline, fuel oil, kerosene, etc., at this New York station of the Lotos Oil and Distributing Corporation constitute a fire hazard which the City authorities decided should be safeguarded by the Foamite System



Interior of the Foamite pump house, marked "P" in illustration above. If fire breaks out, the electrically-driven pumps will force the two chemical solutions through parallel piping to Foamite standpipes and hose lines located at all danger points. Two of the hose stations are indicated by "H" above

Bulk Oil Storage in the Heart of New York!

Made safe against the menace of fire by the installation of a standard Foamite System

BEFORE the Lotos Oil and Distributing Corporation could operate a bulk storage station in New York City, certain rigid requirements had to be met. One stipulation made by the Board of Standards and Appeals was the installation of a standard foam system of protection against fire.

The authorities agreed on the *Foamite* method as having proved its ability to safeguard life and property from the menace of oil fires.

Many other municipalities have made similar rulings.

The same scientific and engineering principles which have saved millions to the oil industry by promptly extinguishing large tank fires, are equally effective as applied to bulk stations, refinery buildings, and filling stations. Where a complete *Foamite* System is not required, highly efficient safeguards are available in the *Foamite* 40-gallon Engine and the *Foamite* 2½-gallon Hand Extinguisher.

And *only* with *Foamite* equipment can you obtain the genuine Firefoam Liquid which produces tough, heat-resisting, fire-smothering Firefoam.

FOAMITE-CHILDS CORPORATION
Fire Protection Engineers and Manufacturers
154 Turner Street, Utica, N. Y.
Representatives located at points convenient to all principal oil producing and refining centers

Foamite-Childs Protection

A Complete Engineering Service

Against Fire

We show a Wilson Rotary Tong having jaws and pins made of Agathon Alloy Steel

And for Rotary Tongs, Too

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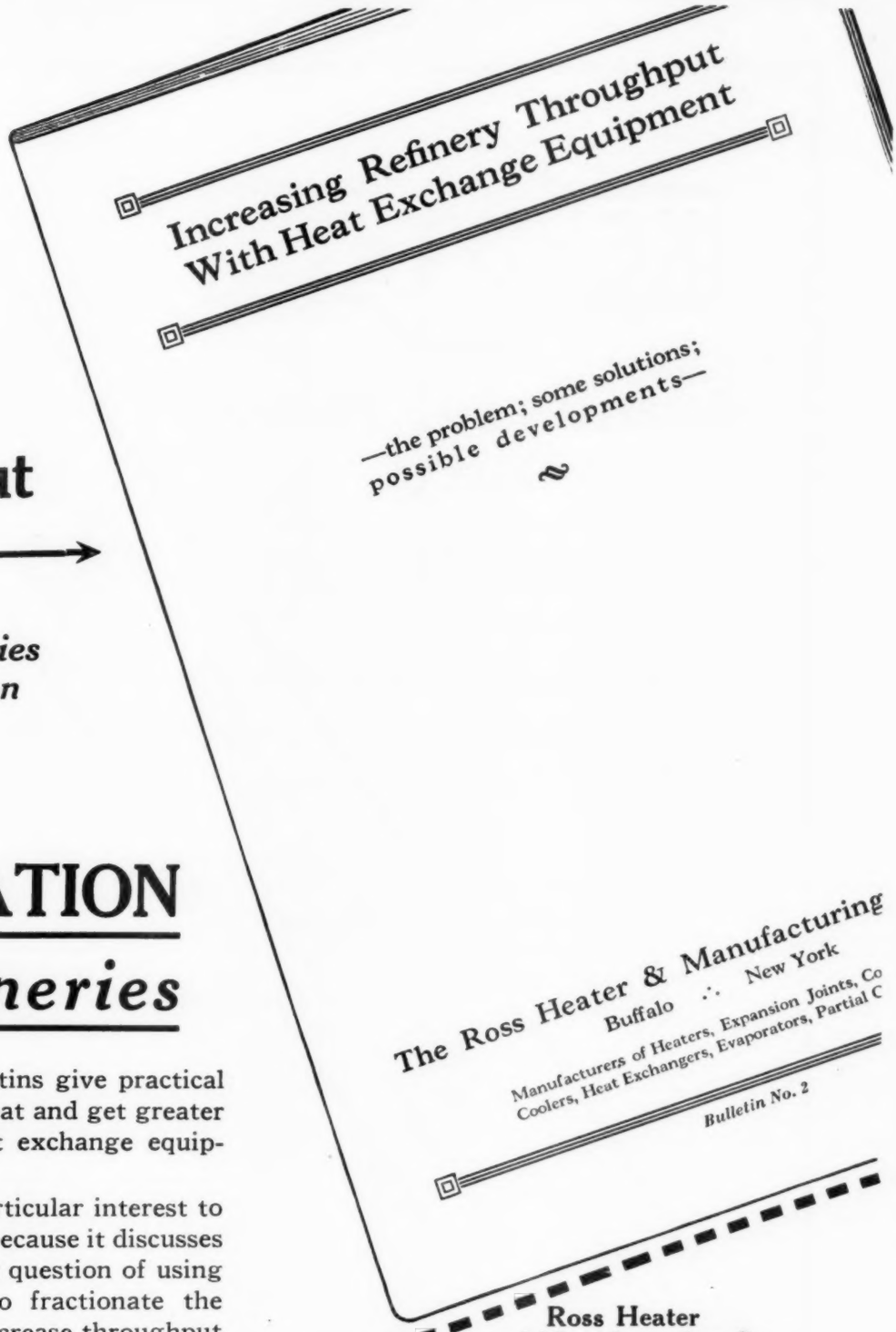
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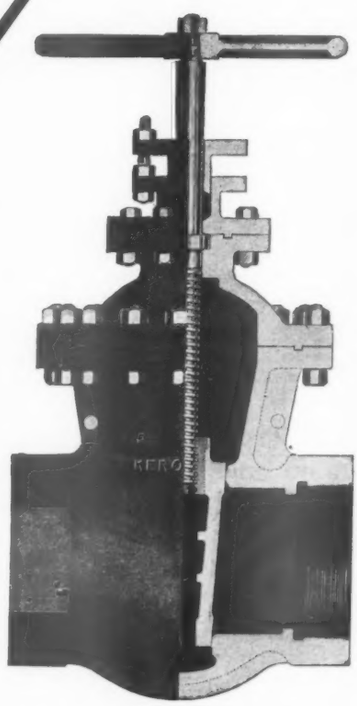

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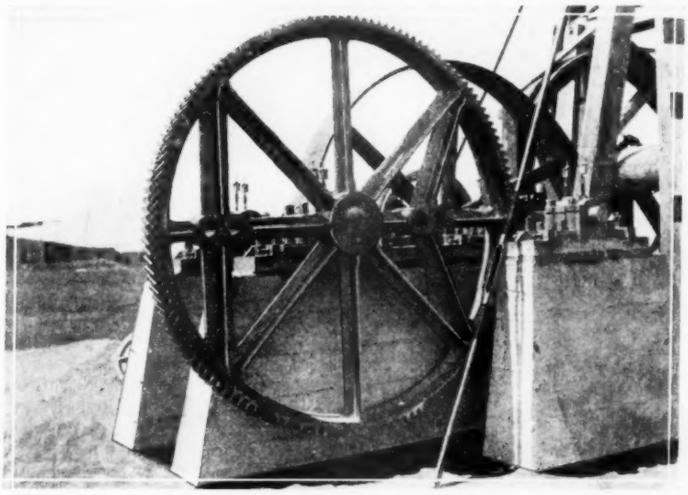

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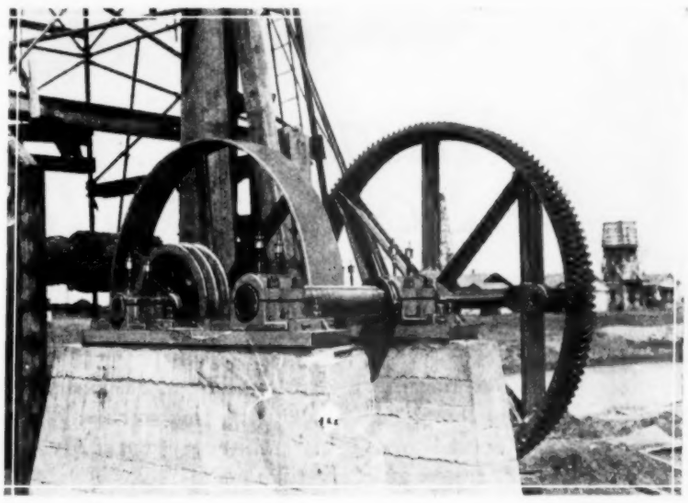

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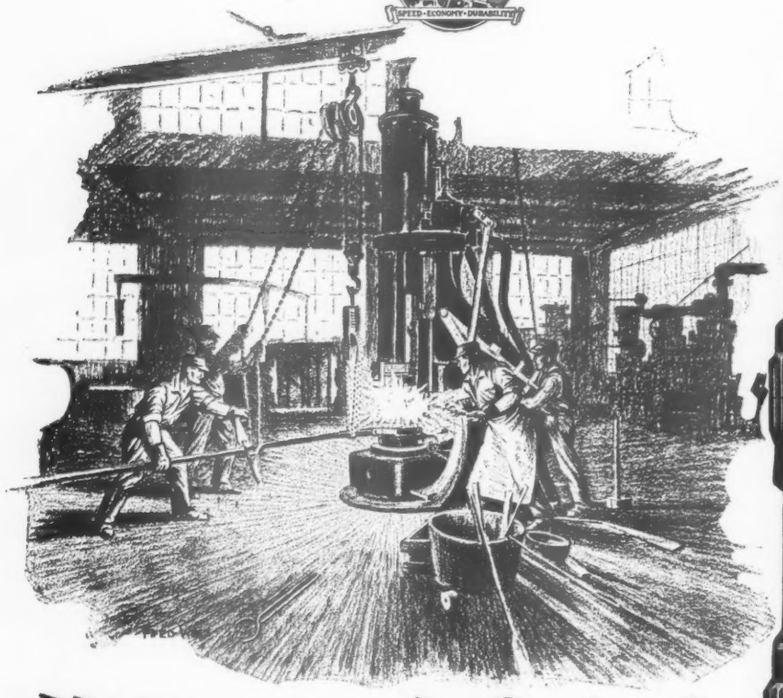

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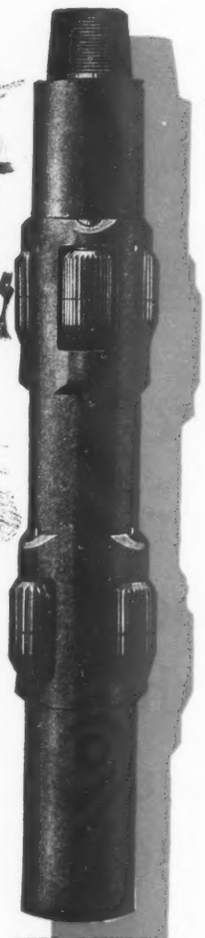

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PRODUCING REFINING MARKETING

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Crude Oil Market Slowly Weakening

Highest daily average estimated production week ended May 30, 1925, 2,347,984 bbls. Lowest in 1925, January 3, 1,911,730 bbls.

Upton-Crane Area in West Texas and Seminole Pool in Oklahoma Are Important Factors in General Situation

By Andrew M. Rowley

Highest daily average estimated light oil production in 1925, week ended January 17, 1,525,220 bbls. Lowest in 1925, July 18, 1,374,173 bbls.

While it is estimated approximately 35,000 barrels of crude is being withdrawn from storage in Oklahoma and Kansas daily, the general situation is slowly crystallizing toward a point where crude oil price readjustments in some fields at least may be expected. With the Panhandle Field in Texas averaging more than 100,000 bbls. daily, the West Texas territory looming as a most important factor in the general situation; developments in the Seminole Pool in Oklahoma bearing out predictions that section will be producing around 60,000 barrels daily by November 1, and the Spindletop Pool in the Gulf Coast maintaining its big output, production is climbing to a point where it is believed the major purchasing companies will be unable very much longer to hold prices in all fields at the present level.

When the big buyers of crude in the Mid-Continent area begin to put crude oil in storage, prices certainly will be reduced. It is believed that condition will obtain before Seminole reaches its peak, although prices have held remarkably well in the face of constantly rising production and the industry has not become alarmed in the least over the Texas Panhandle and Spindletop. It is felt the Upton-Crane area in west Texas, where the Dixie Oil Company completed a 5,000-barrel well this week, and the Seminole Pool in Oklahoma will have more bearing on the general situation than anything else in the picture at this time. California must be considered, also, as the intensive activity in the southwest extension of Huntington Beach doubtless will increase production there and serve to maintain California's output above the 600,000-barrel-a-day mark.

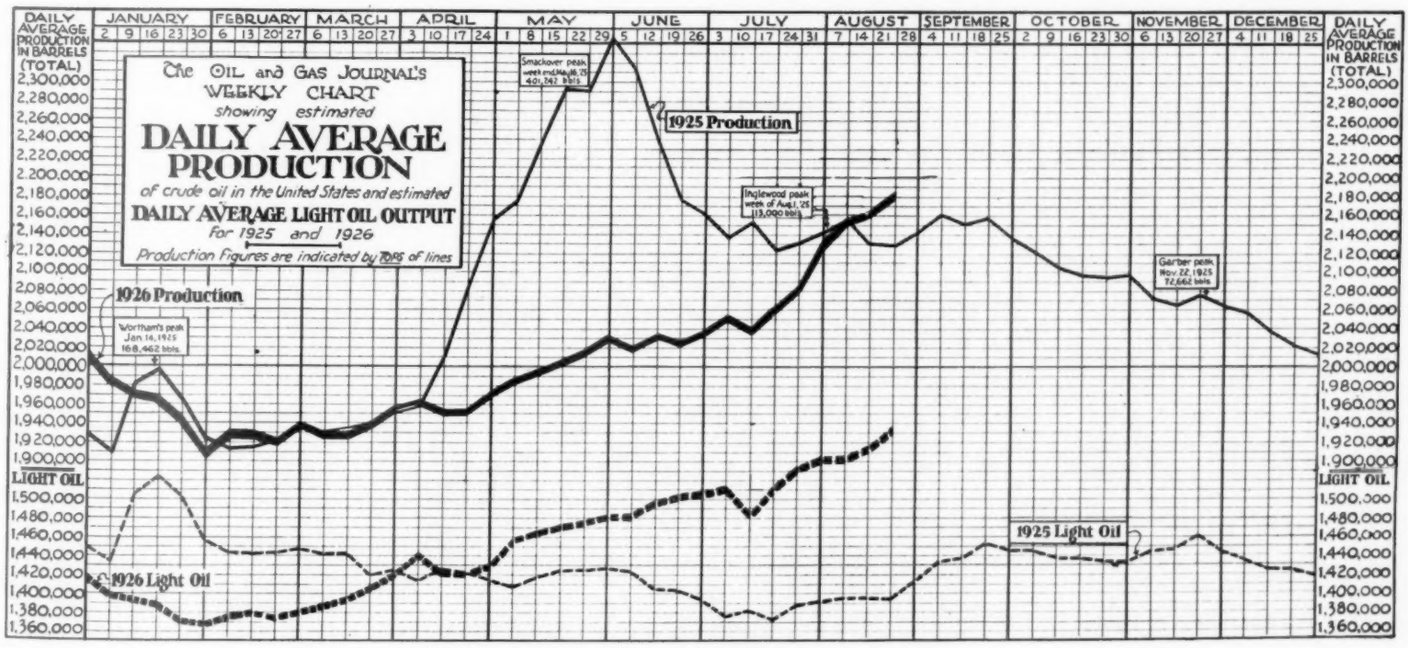
As has been pointed out before, the production situation at this time is not as serious as a glance at the total output might indicate. The big increase recently has come from Panhandle and Spindletop and these two fields last week contributed 185,000 barrels to the total. That leaves 2,000,000 barrels for the other fields. A production of 2,000,000 barrels a day can be absorbed easily without any depressing influence whatever upon the crude price structure. The production of the Texas Panhandle has had comparatively little effect upon the general situation and it will not exert any great influence until there are better facilities for moving the crude to markets and refiners have overcome difficulties in refining it.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity crude oil in the United States for week ended August 21, and a comparison with the previous week follows:

	Aug. 21		Aug. 14	
	Light	Heavy	Light	Heavy
Ok'lahoma—				
Tonkawa	35,740	.....	37,140	.....
Burbank	49,255	.....	49,220	.....
Other Osage Fields	34,035	.....	34,070	.....
Cushing and Shamrock	21,620	.....	21,595	.....
Bristow and Eastern Bristow	27,985	.....	28,215	.....
Cromwell	16,405	.....	16,530	.....
Garber	32,345	.....	33,270	.....
Blackwell-Braman	25,180	.....	18,530	.....
Seminole	14,669	.....	14,375	.....
Wewoka	32,010	.....	32,955	.....
Northern Miscellaneous	113,405	.....	113,710	.....
Southern Fields	65,450	.....	65,270	.....
Total Oklahoma	468,090	.....	464,880	.....
North Louisiana	42,080	14,220	42,815	13,785
Arkansas—				
Smackover	14,800	121,995	14,895	121,640
Miscellaneous	19,877	.....	20,330	.....
Total Arkansas	34,677	121,995	35,225	121,640
North Central Texas	181,002	.....	178,948	.....
Texas Panhandle	105,820	.....	94,260	.....
Powell	27,900	.....	28,300	.....
Mexia, Currie, Richland	14,725	.....	14,810	.....
Nigger Creek	11,000	.....	3,000	.....
Wortham	6,900	.....	7,050	.....
Kansas	112,710	.....	111,215	.....
Total Mid-Continent Area	1,004,904	136,215	980,503	135,425
Gulf Coast	.....	170,630	.....	170,280
Southwest Texas	.....	45,885	.....	46,240
Eastern	107,250	.....	105,200	.....
Rocky Mountain Area	110,485	.....	113,570	.....
California—				
Santa Fe Springs	49,000	.....	49,000	.....
Long Beach	106,000	.....	107,000	.....
Huntington Beach	44,500	.....	45,000	.....
Torrance	5,000	23,000	5,500	23,000
Dominguez	21,000	.....	21,000	.....
Rosecrans	15,500	.....	15,500	.....
Inglewood	25,500	20,000	26,000	20,000
Ventura Avenue	47,500	.....	48,000	.....
Remainder of State	41,000	212,000	41,000	212,500
Total California	355,000	255,000	358,000	255,500
Total United States	1,577,639	607,730	1,557,273	607,445
Grand Total	2,185,369		2,164,718	

Total Increase, 20,651 Bbls.; Light Oil Increase, 20,366 Bbls.



WHAT AND WHERE TO BUY—PAGES 181-182-183

Group 3 Refinery Trends Unchanged

Gasoline Prices Continue to Decline, But Other Products Are Stronger; Kerosene Tankwagon Price Is Advanced

By Neil Williams

With fuel oil, gas oil and distillate prices the highest they have been since 1921, kerosene nearing the peak reached during May of this year, and, on the other hand, gasolines softer, having declined nearly a cent since August 1, the Oklahoma (Group 3) refined market presents an unusual situation.

Due to the generally uncertain marketing conditions every development is being watched closely both by sellers and buyers to ascertain any possible trend in prices of these products over the next 30 days. The heavier end products have reached a point where it is hazardous to predict further advances while the continued sluggishness of gasolines has caused considerable doubt as to the future of that product.

By mentioning the uncertainty of fuel oils, gas oil and distillates, it is not intended to be implied that there is any question as to the present strength of these products. However, the height to which prices have climbed has led to considerable speculation as to the market limits of these products.

All the heavier end products continue unquestionably strong with present moving prices depending entirely on the ability of the buyer to find the material. All sales of these products the past week were limited more than ever before by the scarcity. While some refiners may have some supplies of fuel oil, gas oil or distillates, these products are not available for the market and are being held for possible higher prices.

Just what the price limits will be remain to be seen. The growing refinery efficiency and cracking developments not only have limited the supply of fuel, gas oil and distillates this year more than ever before but there is also an enlarged demand.

As mentioned, present prices of fuel oil, gas oil and distillates are higher than at any other time since 1921, a year which ended a period of greatly inflated markets. Whether these products will be placed at a greater premium is one of the principal points of interest in marketing circles.

High Fuel Prices

The industrial and burner demand for these products as the autumn and winter season approaches is one of the most important factors to be considered. It is admitted by both sellers and buyers that there is a maximum price which can be paid by fuel and burning oil consumers. When this point is reached these consumers will turn to other fuels, but many market students are of the opinion that the situation is such now that with the cracking demand and the decreasing amount of fuel, these products available will be sufficient to maintain a high market.

On the other hand, the cracking demand, it is pointed out, will depend largely on gasoline requirements. As gasoline continues weak there may be a tendency to reduce production, which in turn may serve as a check on the demand for cracking stocks. These factors, which are more pronounced at this time than ever before, are at the root of the general uncertainty which prevails and causes market students to be hesitant to express any definite opinions as to the trends during the next few weeks.

Gasoline Situation Puzzling

The gasoline situation is puzzling. The market continues soft, all prices declined

(Continued on Page 156)

REFINED MARKET BAROMETER

The strength of kerosene, fuel oil, gas oil and distillates featured refined markets of the country east of the Rocky Mountains the past week. In all areas these products continued in strong demand, and from some refining districts, especially the Mid-Continent, they were practically unobtainable. The strong kerosene situation was reflected in general tankwagon advances throughout the northern, middle western, eastern and some southern states, these being followed by boosts by refiners on tankcar quotations. Kerosene has been scarce both because of lessened production due to improved refinery methods and because of increased export and domestic requirements. Gasolines, on the other hand, found only a spotted demand at refineries, although motor consumption over the country continued heavy. Substantial reductions were made in refinery quotations in most areas east of the Rocky Mountains due to the comparative slowness of spot buying and among California refiners competition for sales was keen as a result of disturbed marketing conditions. Natural gasolines were much improved, with prices generally higher. Lubricant prices on the whole continued steady despite spotted weaknesses.

Mid-Continent—Gasoline prices continued to decline during the week, but all other products were stronger. The kerosene strength was reflected in a second tankwagon advance over the territories of the Standard Oil Cos. of Indiana and Nebraska, followed by a quarter to half cent boost in tankcar quotations. Fuel oil, gas oil and distillates were practically unobtainable. Natural gasoline demand improved and lubricants were steady.

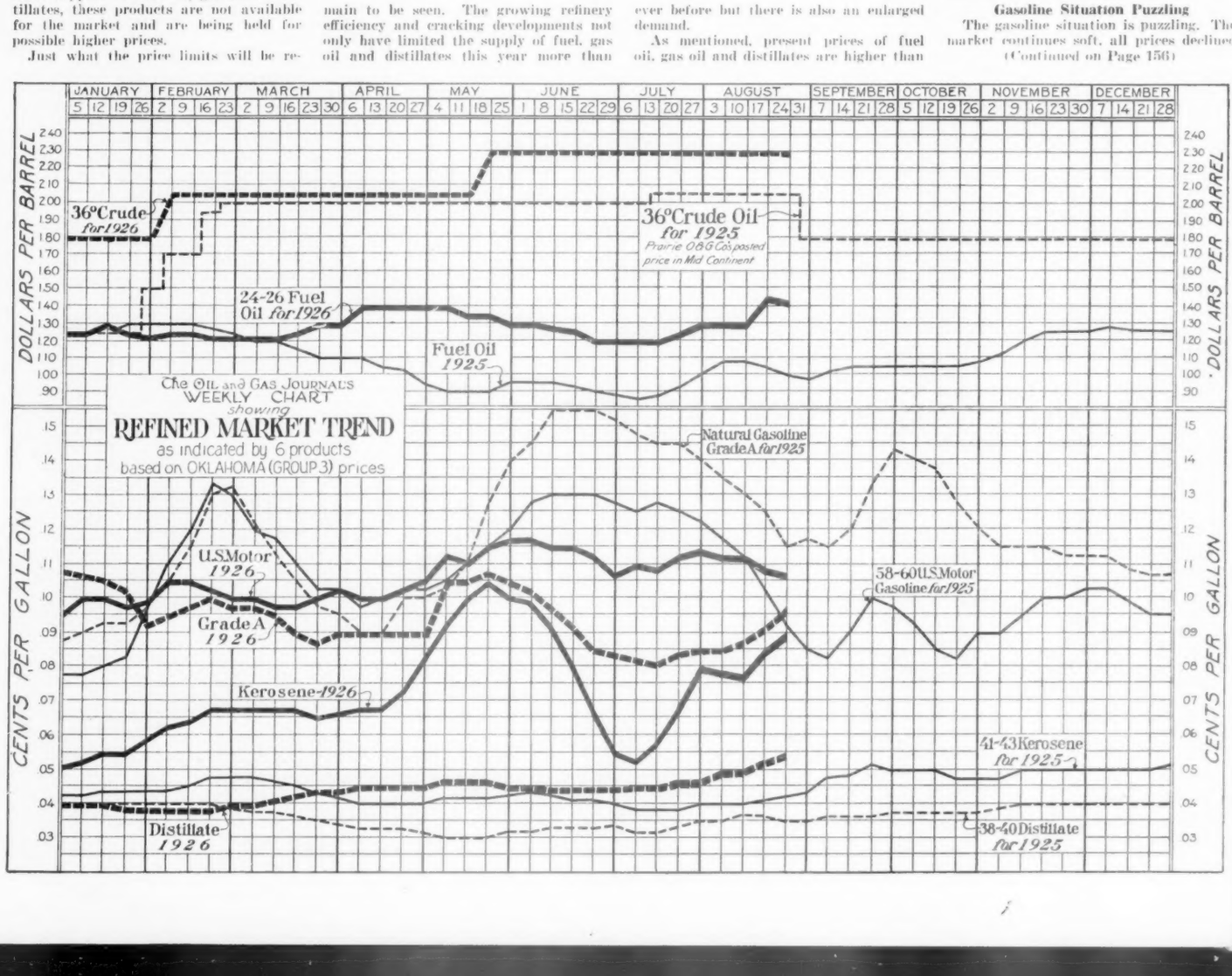
Atlantic Seaboard—Tankwagon advances boosted eastern refinery kerosene markets. Gasoline prices cut, but demand fair. Furnace oil prices forced up a half cent. Gas oil and fuel oil firm and in fair demand. Lubricating oils except red and pale paraffin oils, which were dull. Petrolatum still weak, although improvement over previous week.

Pennsylvania—Gasoline moved fairly well during the week, considering heavy rains, and prices held their own. Kerosene stronger, as in other districts. Neutrals active, but cylinder stocks weak. Fuel oil in good demand. Wax buying fair.

Chicago—Gasoline noticeably weaker. Kerosene prices up following tankwagon raises. Other products in continued heavy demand and all prices strong.

California—Gasoline and lubricating oil markets disturbed by keen competition for sales. Prices considered unsatisfactory. Other products unchanged.

Gulf Coast—Weakening felt in few grades of lubricants and prices reduced a half cent on 750 viscosity material. General price structure unchanged.


JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
DOLLARS PER BARREL
36° Crude for 1926
24-26 Fuel Oil for 1926
Fuel Oil 1925
36° Crude Oil for 1925
Prairie 0.86 Co. posted price in Mid Continent
The Oil and Gas Journal's WEEKLY CHART showing
REFINED MARKET TREND
as indicated by 6 products
based on OKLAHOMA (GROUP 3) prices
CENTS PER GALLON
U.S. Motor 1926
Grade A 1926
Kerosene 1926
Distillate 1926
Natural Gasoline Grade A for 1925
58-60 U.S. Motor Gasoline for 1925
41-43 Kerosene for 1925
38-40 Distillate for 1925

Bradford Soda Test Interests Industry

Old Pennsylvania Field Just Now Cynosure of Many Eyes, But More Results Unknown for One or Two Years

By James McIntyre

BRADFORD, Pa., Aug. 21.—A flood of letters has poured in upon Paul D. Torrey, geologist, since the publication in The Oil and Gas Journal of the story on experiments with soda ash in the Bradford Field.

The letters came from every part of the United States where oil is produced. Some of them have been from the highest executives in big oil corporations; others from geologists and petroleum engineers and from individual oil producers. All asked for more details and up to date information on the results of the application of soda solutions to the Bradford sand.

As The Oil and Gas Journal's story from Washington, D. C., written by The Journal's correspondent, Charles E. Kern and based on information given him by officials of the United States Geological Survey was a complete exposition of the facts there was little which Mr. Torrey could add at this time and to all his inquirers he replied that so far as known none of the wells which might be affected by the soda have shown unusual results except those of the Pressure Oil Co., as stated in Mr. Kern's article. These wells are showing a larger recovery than that which could normally be expected.

There is considerable question in Mr. Torrey's mind whether the proper concentration of solution has been used in most of the 55 or 60 intake wells treated.

"The soda in most instances has been introduced as a concentrated solution," Mr. Torrey said, "and it is possible that the sand has been partially or entirely plugged. I think that before soda is tried a careful study should be made of the conditions which it will encounter, especially the matter of salts dissolved in the water. I do not believe that the results obtained thus far justify the statement that the process will be a success, but I also think that it is by no means to be condemned and it seems that the results obtained on the Pressure Oil Co.'s property are encouraging."

Mr. Torrey added that the analyses of water from the wells of the Pressure Oil Co. have shown the most dilute concentration of dissolved salts of any samples he had collected in the field.

It may be, he continued, that the use of soda will have to be delayed until an area has been previously flooded with water and the salt removed from the sand.

"Everything now appeals to me as being in an experimental stage," Mr. Torrey said. "I have tried at all times to maintain a most conservative attitude toward the soda and although I have hopes for its success, I cannot honestly say more."

It Is a Waiting Game

There is the widest diversity of opinion in the Bradford and Allegany fields on the question of the use of soda in recovering oil from the sands, but most of the operators to whom the writer talked on the subject expressed themselves as in a waiting attitude of mind. They were willing to be shown and they expressed the highest opinion of Dr. P. G. Nutting, geophysicist of the United States Geological Survey, whose long experiments laid the foundation for this new method of oil extraction, and whose enthusiasm had been so infectious as to cause Bradford operators to try the experiment. None of the officials of companies which have treated wells to the soda solution, aside from W. C. Purple of the Pressure Oil Co., could say that they had noticed any results thus far, but they were all waiting to give the soda more time to get in its work. Nothing can be done to hurry the process. Doctor Nutting has said that it may take two or three years from the time the soda is dumped into the water wells until it will be effective as a means of increasing production in the oil wells, so Bradford producers have one or two years to wait before they will be entitled to pass judgment on the latest method of renewing the usefulness of old and otherwise exhausted fields.

Paul D. Torrey

Paul D. Torrey, who was sent to the Bradford Field by the United States Geological Survey to observe the tests with soda ash used in connection with the water drive in renewing the production of old wells in that field, is a Louisianan by birth, a graduate of the University of Pittsburgh, and previous to coming to the Bradford Field had an extensive experience in geological work in several of the Rocky Mountain States and in Louisiana and Arkansas. He is being retained in the field by the Northwestern Pennsylvania Oil Producers Association.

Paul Torrey, who was "borrowed" from the United States Geological Survey by the Northwestern Pennsylvania Oil Producers Association, so that he might note progress, is dividing his time between a study of the soda ash method and a geological survey of the Bradford structure. He and two other geologists, Charles R. Fettke and W. A. Copeland, of the department of geology of Carnegie Technical Institute, in Pittsburgh, Pa., are engaged in making a map of the structure with 5-foot contours, wherever possible, and this map when completed will be available to all Bradford producers and the public.

In Mr. Kern's article in The Oil and Gas Journal of July 29, (Page 39), he says that the soda ash is dissolved at about 40 pounds to the barrel of water. This coincides with Paul Torrey's opinion, and is in line with the practice of H. M. Ryder, physicist for the Petroleum Reclamation Co. in applying it on one property of that company in the Bradford Field, but some of the wells in the field were given a solution which contained 60 pounds and even 70 pounds to the barrel of water. The Minard Run Oil Co. used 60 pounds to the barrel of water in its tests. The solution was applied in September, 1925, and up to August 13, of this year, Elmer E. Bryner of that company told the writer, no results had been forthcoming. The Kendall Refining Co. is said to have used 70 pounds to the barrel of water in some cases at least, and no increase in production has yet been noted, but Otto Koch, president of the company, has not lost any of his faith in the experiment.

Four Wells Show an Increase

The Pressure Oil Co. tried the application of the soda solution in two of its intake or water wells. Eighty-two feet from one intake well and 92 feet from the other was an old abandoned oil well which the company cleaned out for the purpose of testing out the soda solution. It was in this well that three times the production expected of an ordinary water drive was recovered. At the same time three of the pumping wells located considerably farther away began to increase in production until they were doing twice as much as formerly and twice as much as other pumping wells on the lease affected only by the water drive from other intake wells. The increased production in the three wells referred to is considered more significant than the big production from the old abandoned well, and their performance makes the soda experiment appear like a real achievement.

Mr. Torrey's suggestion that it would be safer to try the method on properties or parts of properties which had already been flooded may result in a number of such experiments as there are many parts of the field which have been flooded and where no other known method of oil extraction except perhaps mining or the soda treatment would recover a barrel of crude.

Sand Contains Salt

Mr. Torrey's suggestion is based on the recent discovery that the Bradford sand was not free of salt, as had been the general opinion in past years, and that analyses of the water from pumping wells show a considerable difference in saline content as well as a variation in the character and quantity of other chemical constituents. He fears that there may be parts of the Bradford Field where the soda coming in contact with certain other chemicals will create an insoluble plaster which would clog the sand pores. Such a possible chemical reaction is described in Mr. Kern's article of July 29.

The water that enters the intake wells and floods the sands contains no salt, but in its passage through the sand to the oil, or pumping wells, it picks up salt where such occurs and several pumping wells visited by the writer were showing more or less salt water along with the oil they produced. Thus far all the soda experiments were made on leases which are being flooded and are producing. Torrey's idea is that nothing would be lost if the experiments were made on leases that had been flooded and had ceased to produce oil. On such leases practically all the salt would have been exhausted and the soda would have a clearer field in which to work. There would be plenty of oil in these "exhausted" sands—perhaps 50 per cent of their original oil saturation, in fact, if the estimates of eminent geologists were correct—and the recovery of a part of this would pay big returns for the expense of applying the soda process.

Peculiarly Adapted to Flooding

The character of the Bradford sand is peculiarly adapted to the use of the water drive and the application of soda, and that brings up the subject of the Bradford structure. More misinformation has been spread about the Bradford structure and the Bradford sand than about any other structure in the United States. It seems to have been the idea in the early days when petroleum was a perfectly flat body, and up to a short time ago writers of books and in trade and scientific journals persisted in the error. In 1880 Ashburner described the Bradford sand as a gray white sand of about the same coarseness as the ordinary beach sand of the New Jersey coast, which also was a most pronounced error, the sand being in reality fine grained and very hard, and chocolate brown in color.

Panyity's Discoveries

L. S. Panyity, geologist and engineer, formerly with the valuation unit of the Internal Revenue Department, was the first geologist to make a serious examination of the Bradford Field structurally, and he was surprised to find that all his preconceived ideas, based on what he had read of it, had to be revised. Later, resigning from the Government service and entering the field as a geologist for the Forest Oil Co., he made a survey of the field and a map with 50-foot contours for that company. He is now practicing his profession independently in the field. This is the only structural map of the field now in existence, but it is not accessible to the public.

The Bradford structure is described by Paul Torrey as so pronounced that it is found in the areal geology, older beds outcropping on the highest part of the structure and younger beds along the flanks. The structure is large, just as

(Continued on Page 129)

GOVERNMENT FEELS JOINT ACTION BETTER IN SODA ASH EXPERIMENTS

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Aug. 23.—In field experimentation with the soda ash solution as applied to oil wells, the Geological Survey feels that the best results can be obtained if local producers' associations in a given field will act jointly as was done in the Bradford Field.

This joint action is looked upon as much more likely to produce desirable results than if individual producers proceed separately. By such joint action the best localities for the application of this process and the most favorably adapted wells can be selected, thus increasing the prospect for success.

The Geological Survey will be glad to advise oil producers' associations anywhere in the United States as to the best experimental procedure. Especially from Oklahoma, California and Wyoming inquiries have come from producers indicating their interest in starting experiments.

Laboratory and Field Tests

The soda process for petroleum recovery, developed at the United States Geological Survey over a year ago, showed complete recovery in small scale laboratory tests using a variety of crude oils and of sands.

The Bradford area appeared well adapted for trying out the process under field conditions. The field is old and the oil quite free from gas. Water is abundant and its use in oil recovery permitted by law. Systematic water flooding between wells closely spaced (180 feet) has been common practice with many producers for years so that the use of the soda process would involve only a modification of existing methods already well

(Continued on Page 129)

Cooperation Among Industries Needed

Petroleum, Steel and Automotive—Big Three—Should Work Out Future Plans, Problems, Without Hindrance

By Phillip Kates*

A claim is made that through a new refining process, a barrel of crude oil may be made to yield 85 per cent gasoline. Whether or not this be demonstrated by practical installations on a large scale, the fact is that more of the valuable products of crude oil are being recovered than was the case a few years ago, and still greater improvements are being made.

To what extent the expanding prosperity of the country has been made possible by the opening up, within the past 20 years, of great fields, and by the erection of vast refineries, the building of transcontinental pipeline systems, and the development of convenient system of distribution of gasoline, is difficult to state, without the appearance of exaggeration. The net earnings of General Motors for the first six months of 1926 ran somewhat over $93,000,000; the net earnings of the United States Steel Corporation for the same period were approximately the same. Every index of prosperity, bank clearings, wages, car loadings, and now the prospective value of farm products, stands at a high level. A general higher scale of prices means more money in terms of dollars, even though there were no actual increase in material wealth. But commodity indexes as well show a greater accumulation and diffusion of wealth than ever before.

Prosperity Depends Largely on Oil

The expansion in the oil business, during the past 25 years, while it may not be the cause, is certainly a condition upon which present prosperity largely depends. In 1900 the annual production of crude oil was less than 64,000,000 barrels; in 1925 it was 60,000,000 barrels. The amount of steel that has been consumed in drilling the oil wells, in laying the pipelines, in erecting steel storage, in building refineries and tankcars has been no inconsiderable factor in the expansion of the iron and steel industry; and the tankcar loadings have been no inconsiderable factor in railroad income. And it is obvious that without an adequate supply of gasoline, at a reasonable price, the automobile industry in America would not today occupy its commanding position. It is no coincidence that expansion in the steel industry and in automobile manufacture followed the opening up of the great oil fields of the Mid-Continent area.

With improved railroad methods, and its consequent ability to vary the amount of gasoline, kerosene and fuel oil recovered from a barrel of crude, the oil industry is able to meet the demand for its products, and also is able to anticipate requirements that may change with the changing nature of industrial demand. Under older refining methods the entire supply of crude today would not yield sufficient gasoline for present needs.

Twenty-five years from now the present demand may appear as insignificant as the 1900 demand appears to us today. To meet present demands the supply of crude has been expanded from about 200,000 barrels per day to over 2,000,000 barrels; more than 1,000 per cent. A similar expansion in supplies in the next 25 years appears impossible, but one would be rash to predict what the demand will be. Auxiliary supplies from synthetic fuel will surely be essential.

Many New Demands For Oil Products

The small car and the farm tractor are now becoming as much a part of the necessary equipment of every farm, as the horse and plow were in other times. Small refrigeration and power plants will follow. And the oil industry should see that such units are perfected to be operated by oil, as well as by electricity. The expansion in demand can be assured with more certainty than the expansion in supply.

Any program for the widespread extension of the use of the internal combustion engine is based upon an assurance of a supply of iron and steel; and a permanent and steady supply of oil. The supply of steel is ample and can be computed precisely from the estimates of recoverable ore and the annual mine of coal. The supply of oil now can apparently be computed from the extension of the use of new methods of recovery in what, a few years ago, were considered to be fields which must be abandoned as depleted. If a survey of the oil fields of the United States shows that new methods of air recovery and the use of a solution of sodium carbonate in conjunction with flooding the fields with water, is practicable in many fields, then we have an assured supply of oil for many years, without depending on the hazard of geological estimates or wildcat drilling.

A sound plan for the future depends upon a joint program worked out by the oil industry, the steel industry, and the internal combustion engine industry. A program that would base the domestic life of the nation, and to a larger extent also the industrial life, upon the internal combustion engine may seem ambitious; but it is becoming more and more apparent that it is not only possible, but perhaps inevitable. Light can be delivered from a central station, and with the development of water projects, in some localities, power also. But the perfection of a small, cheap power unit for refrigeration, light and heat will result in individual installation on so vast a scale that a few years may make the present use of these plants appear as insignificant as was the use of the automobile 20 years ago.

Co-operation Is Great Need

In the reconstruction of Europe, the main need is seen to be co-operation. The movement towards dictatorships, instead of democratic methods, is not the return of absolute government; it is the attempt of the people to bring about co-operation by compulsion, paradoxical as that may seem. Germany has authorized the grouping of her great industries into units; Italy is placing all the industrial authority of the nation in the hands of the Government; France will be compelled to follow, and even England must take over the mines and rearrange her whole industrial structure.

The United States still proceeds on the legal theory that business must be forced to compete, even on ruinous conditions, for co-operation, we hold, leads to monopoly, and so every attempt at joint action brings up the ghost of the Sherman anti-trust law.

Certainly no one desires a return of the wild promotions of the nineties; but they are as dead as the family treaties of the royal houses of Europe. But the future demands consolidations, combinations, mutual understandings. And not alone within the industries, but between the industries.

The permanence of expansion in the steel industry demands diversified demands for products made from steel; expansion of the automobile industry demands that the internal combustion engine shall be increasingly used for other purposes than transportation; and the expansion of the oil industry demands an increase of demand for its products.

If the expansion ahead were to be based solely on what we may term luxuries; such as improved automobiles, we might say that there should be a contraction rather than an expansion. But if it is to be based on a reconstruction of farm industries, and city domestic life, it should be accelerated.

Capital Wants Concrete Security

Prophecy is a dangerous business. Yet at the close of the Napoleonic wars, Macauley foretold that in the time of men then living, because of the expansion of machinery, and improved methods of farming, the debts that bowed the shoulders of Europe would become insignificant; that machines then undreamed of would so do the work of men, that wealth and comfort would increase to such a degree that the mass of the people would be materially better off than ever before. The future may bring machines of which we do not even dream now; the transmission of power by radio; the extraction of power from atomic energy may come; but we can no more base our future on these unforseen events, than one can borrow money on a ticket on a horse race. Investing capital as well as a banker wants some fairly concrete security.

The internal combustion engine, plus an assured supply of fuel, are the concrete things upon which we may now visualize the future; as well as the vast iron and coal deposits of the United States. These are real and permanent and are collateral at the bank. Stock market movements may rise and fall; but the curve of value of oil and steel and automobile securities is an upward curve.

Each industry must, of course, work out a program for expansion in the use of its products, but permanent benefit may best come through joint effort. Improvement of products, and expansion of use do not come, of course, from any theoretical program worked out on academic lines. Each refinery wants to get all it can from a barrel of crude; every producer wants to get all the oil he can from the fields. It is the incentive of individual profit that makes for progress. But in the present massing of capital into corporations, every large plant must have many owners. And men who have accumulated much money, must today have many investments in different businesses. All interests are becoming more communal though not communistic.

Must Stimulate Consumption

And the increase in production necessitates a stimulation of consumption. Thus, the incentive to profit is dependent upon an increase in material prosperity in the mass. The 2,000,000 barrels of crude oil, run to the refineries every day has to be consumed, or the refineries will shut down. It has to be run to the refineries or the wells will shut down. An increasing number of engines must be constructed or it cannot be consumed. And if the saturation point is reached in automobiles, other uses must be found for the engines. It is a circle which begins with individual profit, and ends in communal benefit.

And one industry benefits or injuries another, as it is expanded or contracted.

What we may call the big three, Steel, Oil, Automotive, these especially are interdependent. For the Government to demand that each industry should proceed without definite relation to the programs of the others, is unsound. Of course, in a general way the publicity attaching to annual reports; to estimates of steel tonnage, to daily production of crude, and storage at refineries and jobbers' depots, make available for all certain information of each industry. But there is no close relationship between programs for the future. And if the information can be broadcast as it is today, there need be no fear of secret combinations that would harm the public.

Obviously no industrial program can be laid out based on academic theory. It must be practical, and to be practical it must be based on actual needs. But neither need it be haphazard, dependent in one industry on factors not known to the other industries. This may well cause temporary derangements that result in depression in trade. Instead of beginning with an elaborate paper scheme, there might be preliminary conversations between committees of the American Petroleum Institute, the Automobile Board of Trade and the American Iron and Steel Institute. In these conversations the general requirements of each industry and its plans for future expansion over a period of years could be disclosed. Upon that a plan of co-operation could be worked out that might be submitted to the Department of Justic, to determine if it violates any provision of the anti-trust laws. If it does, then the industries might concentrate upon proper legislation that would permit the carrying out of their plans.

Today capital is massed in such huge corporations, which are necessary to make possible the

(Continued on Page 145)

*This is the fourth of a series of articles by a Tulsa attorney who has made a study of the petroleum industry.

Practical Conservation Winning Out

Government Official Lauds Large Oil Companies; Urges Co-operation and Praises Petroleum Research Activities

By George Otis Smith
Director U. S. Geological Survey

Anyone who feels concern about the present status of the oil industry can find in certain oil fields abundant cause for "viewing with alarm" and in others gratifying reasons for an optimistic outlook. The economic errors of the past still persist in too many fields, while elsewhere the progress in technique is so rapid as to promise immediate betterment. The petroleum engineers representing the Department of the Interior in these old fields thus have a large opportunity to aid in the spread of the best practices, and I was pleased to note that this influence is being exerted by our engineers. Equally satisfactory, too, is the co-operative spirit existing between the Federal engineers and the state officials charged with the administration of the state laws relating to oil and gas. Such co-operation is absolutely essential, for measures aimed at insuring efficiency and safety in the control of oil and gas wells can not stop at any property lines separating the jurisdictions of nation and state.

The Kevin-Sunburst oil field, in northern Montana, is unfortunate in its present activity. The operators are finding oil at a time when it is not needed. My drive over the field showed new rigs being built and wells being brought in, although oil of this high grade is here selling at $1.05. The economic law of supply and demand as now enforced in Montana does not give the oil operator even a new dollar for an old, nor is there any assurance that in the future when oil is needed the supply will be at all adequate.

Situation in Montana

Montana from its geographic position, with long hauls to other markets, must depend upon its own market to furnish the chief demand. At present Montana's refinery capacity is only 21,000 bbls. a day, but this one oil field is producing about 25,000 bbls. a day and Montana's own consumptive demand is estimated at only about 14,000 bbls. a day. Storage presents the only remedy for this disparity between supply and demand, and storage is expensive. The outlook therefore is not such as to warrant putting down more wells and yet the competitive drive is on and new wells are being brought in, whether or no.

At Shelby I had the privilege of talking with a dozen or more of the leading operators, and in the discussion there was little difference of opinion as to facts but many views as to how to help the situation. It was agreed that the production should be curtailed, but no one offered to stop pumping or even to stop drilling. Co-operative effort was not thought possible, and legislation to enforce relief measures was not wanted. The ineffectiveness of democracy was well exhibited and freely acknowledged and yet the only hope seems to be in full and free discussion of their common trouble which may lead to some co-operative moves for relief. They all have a common interest, and no task seems more worthy of the local organization of oil operators than to discuss ways and means of conserving some of this oil that Montana will need so much more at some future time, especially because the oil will then be in demand and may be expected to command a price nearer its real value than the present rate of $1..05.

This field is not as far advanced as the older fields to the south in the adoption of the best development practice but an excellent spirit was shown in a discussion of a shutoff program, in which the local men and the Federal and state oil and gas officials participated. The moves necessary to safeguard the oil sands from water invasion will be taken, now that such a program has been fully determined upon, on both private and public lands.

CONSERVATION GAINS

Practical conservation is winning out and industrial leaders are utilizing new methods in the development of the country's natural resources, according to the accompanying special report made to the Secretary of the Interior by George Otis Smith, director of the Geological Survey.

The report contains a summary of investigations conducted by the director into mineral leasing activities on the public demain during a five weeks' trip through western states. Conditions existing at a number of oil fields in Montana and California were described. The report in full follows:

California Activity

In the California oil fields also there is more development activity than seems consistent with the present oil market. However, many of the larger companies with strong field organizations and adequate financial strength are conspicuously absent from this drilling activity, evidently being desirous of limiting rather than expanding production. These stronger companies also have considerable shut-in production, a conservation measure that apparently is helping to stabilize conditions.

Anyone who has visited some of the Valley fields in earlier years must be struck by the advances made there in many departments of field practice. The influence of improved engineering is seen not only in the wonderful progress made in drilling technique in attaining both speed and depth, but also in the methods adopted to safeguard the oil sands from water invasion. Even more conspicuous is the attention given to gasoline extraction from natural gas. Far too much dry gas and spent gas is even now allowed to go to waste by reason of lack of market or of storage capacity, but large capital outlay is everywhere being made to save the gasoline content of the gas flowing from the oil wells. And the importance of adopting new devices to cut down evaporation losses is now more keenly realized when it is so apparent that such losses are in the most valuable fraction of the crude oil. The influence of private and public research can be seen in the progressive attitude of most of the oil operators.

The faith in a better day in the oil business that is awakened by this general search for new and better methods and especially the more sympathetic attitude of practical men toward conservation measures receives a shock, however, whenever a pool like Signal Hill is visited. Here appears all the waste of oil and gas, and of capital and labor, incident to the scramble for production—a discouraging example of bad practices due to the desire for immediate returns regardless of the future. Great diversity of ownership is the mortal enemy of conservation in the oil and gas fields. The outlook is the more discouraging just now when the town-lot operators have entered upon another race in search of a lower sand, thus again multiplying capital expenditure by taking several dollars to do what one might do. If such pools only are observed, calamity howling seems amply justified.

Los Angeles Different

However, another Los Angeles Basin field, within sight of Signal Hill, affords a most practical exposition of true conservation. Here far-sighted management has enlisted technical skill and given full support to every method of bettering production conditions. The Dominguez Field is everything that Signal Hill and other town-lot oil pools are not. At first glance instead of a forest of derricks huddled as close as they can stand, a carefully laid out group of wells is noticed, 610 feet apart, and this wide spacing of itself represents a large saving in capital outlay. The area of this field as now outlined is about 700 acres, but the number of wells is only 70, belonging to five or six companies. Thirty of these wells are flowing, 20 are on the pump, and 20 are being operated with the gas lift; the average production is about 300 bbls. a day, although the field is three years old next month.

The use of natural gas, under pressure, for lifting the oil is the progressive move in the operation of the Dominguez Field that furnishes the most encouragement to anyone interested in the economies of oil production. In every respect the innovation appears successful. The gasoline content, two gallons to the thousand feet, is taken from the gas as it comes from the wells and the remaining 20-pound pressure is then "boosted" to 260 pounds and the dry gas distributed through a manifold to a battery of wells. About 1,100 feet of gas is thus circulated to the barrel of oil lifted, which with the 1,200 feet of gas already with the oil gives a gas-oil ratio below the natural ratio of 2,850 feet observed in this field. The economy of the new method, wherever applicable, is evident when it is learned that the investment cost of equipping a well for the gas lift is less than half that required for pumping, that the lifting cost is only a third or less of the cost of pumping, and that the gas lift is a continuous operation with no shutdowns for repairs.

Big Companies Conservative

Even more interesting are the preparations practically completed for operating a "five-point" group of wells by gas pressure. Gas under a pressure of 550 to 600 pounds will be introduced into the sand through the central well, and by this restoration of pressure the oil will be made to flow from the other four wells. This experiment is probably by now in operation at two places in this field, and the results will be watched for by the oil fraternity generally. The two companies that are making this progressive experiment are to be commended for their willingness to back up their technical men.

The careful and conservative development of this Dominguez Field, in which fortunately only a few companies share control, has already shown results in the savings in capital and in operating costs, in the maintained production, and in the opportunity afforded for improving the operating methods. Continued production seems insured by the measures taken to obtain a large percentage of recovery and the precautions taken to develop at first only the upper 400 feet of the sand, the limit now agreed upon in the field. Here is an example of very practical conservation through the co-operation of oil companies that are seeking long-continued production rather than quick profits. I venture the prediction that their reward will be both maximum recovery of oil and a goodly measure of profits, and thus benefit will accrue to both the consuming public and the producing operators.

If I were to select from my observations and impressions on this inspection trip what appears to me to have most

(Continued on Page 145)

BURBANK LEASES INCLUDED IN NEXT OSAGE SALE, ON SEPTEMBER 30

PAWHUSKA, Okla., Aug. 24.—An auction sale of Osage lands for oil development purposes will be held on Thursday, September 30, in this city.

One hundred and twenty-seven tracts on the east side (east of Range 7) comprising 20,320 acres, and 96 tracts on the west side (west of Range 8), comprising 15,260.72 acres, or in all, 223 tracts comprising 35,580.72 acres, will be offered for sale to the highest responsible bidders. All but two tracts are 160 acres in extent.

In the Burbank area 12 tracts will be offered: Nos. 176 to 185 inclusive and Nos. 194 and 195 on the accompanying list. These include the NW and SW of Section 20-26-6, SW Section 22-26-6, NE and NW Section 28-26-6, NE Section 29-26-6, NE and NW Section 7-27-6, NW and SE Section 13-27-6, and the NW and SE of Section 1-27-5. In Township 28-6 north of the Burbank Field the SE and SW of Section 4 and the NE and NW of Section 9, will be offered. South of Burbank Field in Township 25-6 the NE and NW of Section 5 and SE and SW of Section 5 will be sold. In Township 28-5, all of Section 13 will be offered in separate quarter sections. A lot of wildcat acreage in the west side will be included in the offerings. Following is the list of tracts to be auctioned:

East of Range 7

Tract	and Description—	Acreage
1	SE 18-20-12	160
2	SE 28-22-12	160
3	SW 28-22-12	160
4	NE 32-22-12	160
5	NW 3-23-12	160
6	NE 4-23-12	160
7	NW 31-25-12	160
8	SE 12-20-11	160
9	SW 12-20-11	160
10	NW 13-20-11	160
11	NW 27-20-11	160
12	SW 28-20-11	160
13	NE 9-21-11	160
14	NW 10-21-11	160
15	NE 23-21-11	160
16	NW 23-21-11	160
17	SE 17-22-11	160
18	SE 23-22-11	160
19	NE 25-22-11	160
20	SE 25-22-11	160
21	NE 32-22-11	160
22	NW 32-22-11	160
23	NE 32-26-11	160
24	SE 10-27-11	160
25	SW 14-27-11	160
26	SW 26-27-11	160
27	NE 18-28-11	160
28	NW 22-28-11	160
29	SE 22-28-11	160
30	NW 26-28-11	160
31	SW 13-20-10	160
32	SE 14-20-10	160
33	SW 14-20-10	160
34	NW 23-20-10	160
35	SW 23-20-10	160
36	NE 26-20-10	160
37	NW 26-20-10	160
38	NE 32-20-10	160
39	NW 33-20-10	160
40	NE 12-21-10	160
41	SE 12-21-10	160
42	NE 27-21-10	160
43	NE 33-21-10	160
44	SE 36-21-10	160

(Continued on Page 158)

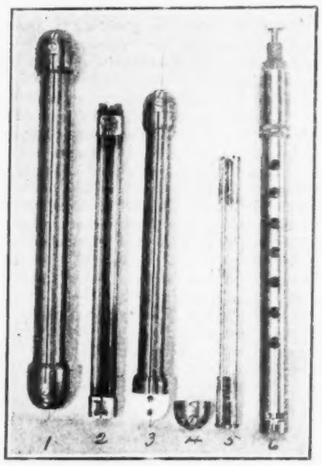
Taking Temperature of Oil Wells

Simple Instruments Devised by Geophysicist of U. S. Geological Survey for Making Tests and Records

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Aug. 23.—The temperature of oil and gas wells some years ago attracted the attention of Dr. David White, then chief geologist of the United States Geological Survey, as an interesting subject for investigation and to him is given credit for the initiation of the present investigation of temperatures at different depths.

To C. E. Van Orstrand, then engaged in geophysical work under the immediate direction of Dr. George F. Becker, chief of the Division of Chemistry and Physics, Geological Survey, was assigned the problem of developing the necessary apparatus to carry on the investigation originally suggested by Dr. David White, and since that time Mr. Van Orstrand has devised



Figures 1, 2, 3, 4, 5 and 6.

a variety of instruments and methods which have been accepted as embodying in a most satisfactory manner a scientifically correct method for accomplishing the purposes sought. Up to this time about 150 wells in various parts of the United States have been tested and temperature records have been made which have contributed very largely to geologic knowledge of earth temperatures to a depth, in some instances, of about 1½ miles.

At the Industry's Disposal

Owing to this preliminary study and the ingenuity that has been expended on behalf of the Geological Survey, the correct principles for carrying on such deep well temperature work are now at the disposal of every oil and gas well owner in the United States. So simple is this entire process that all of the necessary tools and machinery for deep well temperature records are carried by the investigator in a couple of small wooden boxes along with his personal effects. Simplicity seems to be the keynote of the mechanism used in this work so that the oil and gas well operator is often surprised by the short time required for making the tests and records as well as by the ease by which the work is done.

From being started as means of acquiring knowledge of earth temperatures of interest to the geologist, this comparatively new branch of geological investigation may become a separate branch in petroleum engineering of especial value in locating the domes of oil structures. Enough has been learned to cause the oil geologists engaged in this work to believe that higher temperatures exist in and over the dome, these temperatures becoming lower as the tests are made in drillings more and more remote from the crest.

Temperatures in deep wells have been measured in the United States and practically over the entire globe for more than 50 years but apart from a few records obtained a number of years ago by Dr. N. H. Darton of the Gelogical Survey, these observations have been spasmodic and have not been given sufficient systematic development to obtain accurate and comprehensive records.

Former Lack of Facilities

The problem of deep well temperatures was further complicated by the fact that no special apparatus had been developed at that time to measure and record temperatures accurately at intervals down the well.

It was this lack of reliable methods and instruments that led to the assignment of Mr. Van Orstrand to this duty several years ago. Investigations have now been carried to such a point that apparatus has been devised that enables anyone with sufficient skill and experience to measure temperatures in oil and gas wells accurately and efficiently. In other words, there is now a method for deep temperature surveys which is on about the same basis of accuracy and efficiency as is topographic work on the surface by the use of levels and transits.

All of the apparatus that has been devised for this work can be made by any skilled mechanician and as Mr. Van Orstrand has not patented the essential instruments he has devised, they are open to the world. Such is the interest in this work that many inquiries are coming to the Geological Survey for additional information as to methods and instruments, and the view is expressed by petroleum geologists that it will not be long before each owner of property in an area that is being drilled will wish to have the temperatures of all wells, whether producing or dry, plotted at intervals of 500 feet or in special cases of 250 feet so that by a glance at the graphic temperature record he may have the additional information that such a record may give as to possible structural conditions, that are reflected in the temperature.

An Interesting Process

The process of measuring temperatures usually proves of much interest to operators who first observe it. Thermometers have been lowered to depths of 4,000 feet and more by the use of a mere piano

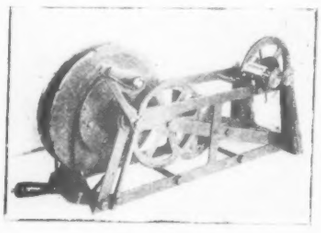


Figure 7.

wire. At the end of this wire is attached a brass weight weighing seven pounds, so devised as to descend through the casing with the greatest facility. Holders of the maximum thermometer can be attached to the wire at any point as it is lowered. Since the lower depths are the hottest the maximum thermometers give a reliable record of the temperature of the lowest depths which they reach because the air or water or oil through which they pass on returning to the surface makes no change in the record made at the lower depth.

The machine used in lowering the thermometer has a sort of speedometer arrangement by which the depth is indicated as the weight passes down through the casing.

In the measurement of temperatures below 3,000 or 4,000 feet or below the bottom of the casing, Mr. Van Orstrand has abandoned the hand operated mechanism because of the dangers of loss of instruments.

In this low depth work the thermometers are attached to the end of the bailer by placing them in a brass tube which is in turn placed in the groove of a wooden block, this wooden block in turn being bolted to the end of the bailer and so lowered into the well.

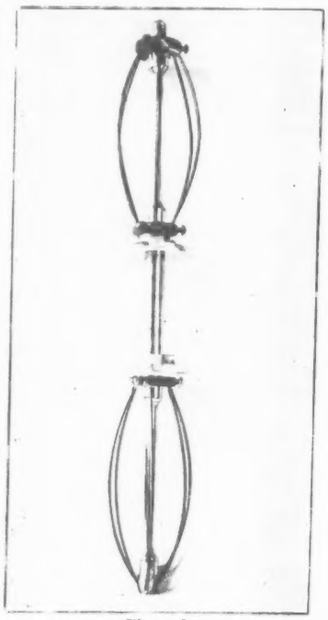


Figure 8.

This entire process is so simple that an intelligent worker can be instructed in its details in a very short time.

Rotary Wells Offer Difficulty

In every drilling operation it becomes necessary at times to stop for repairs. These stoppages give opportunity for making the temperature records of the well. In the case of a rotary well there is some real difficulty because the normal temperature of such a well has been disturbed by the circulating water. It may require several days for such a well to resume normal temperature conditions.

In the case of a churn drilled well probably 24 hours would be quite sufficient for the recovery of normal temperature. In such rig operations there is only a little water at the bottom while in the rotary operation water is constantly circulating from top to bottom.

The time necessary to test a well varies from one to two days. In the case of a well 3,000 feet deep in depth it is advisable to make readings at intervals of at least 500 feet and in some wells in which the temperature curve deviates somewhat from a straight line it is necessary to make observations at intervals of 250 feet at least, and some times when it is desired to locate a flow of gas with a high degree of precision it probably would be necessary to make observations in the immediate vicinity of the gas flow at intervals of 10 feet. The technique involved in making temperature tests may be difficult for the beginner; but with proper instruments and a little experience these difficulties are easily overcome and there need be no more difficulty in making a correct temperature survey of a well than there is in running a line of levels across the field.

Figure 1 is a brass container carrying three thermometers which can be attached to any point on the line used in making deep well temperature records. This type of instrument is used for the purpose of obtaining temperature records in oil or water at a great number of points by one lowering of the wire.

Figure 2 consists of three steel tubes, each tube carrying one maximum thermometer, soldered together in such a way as to be placed in the container (Figure 1) and permit the piano wire which carries the containers to pass through the center of the combination of three steel tubes and also the center of the brass container (Figure 1.)

Figure 3 is the same as Figure 1 in principle and is for use in air only and is not available where there is water in the well. Figure 4 is the clamp for fastening the parts shown in Figure 3 to the wire, at any point on which it is lowered.

Figure 5 is the brass wire frame which carries three maximum thermometers. This is a unit which fits into various containers depending upon whether or not the well contains fluid or is dry. If there is water in the hole, one set is used and if there is no water they use the other.

Figure 6. This is also for use in air and can be attached only at the end of the line. The three thermometers shown in Figure 5 are placed in the perforated brass tube shown in Figure 6 when introduced in a well containing only air. Three thermometers are used instead of only one in a tube for purposes of checking one against the other.

Note: In case there is water or oil in the hole this instrument shown as Figure 6 is replaced by a steel tube of solid wall so as to prevent the thermometers from being exposed to the pressure of the water or oil. In other words, Figures 3 and 6 are for use when the well contains air only, and Figures 1 and 2 and the modified form of 6 in which the perforations are omitted are used when the

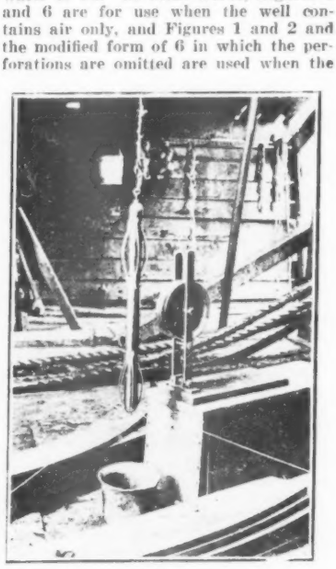


Figure 9.

well contains oil or water; 1, 2 and 3 can be attached to any point on the line while 6 and the modified form of 6 can be attached at the end only of the line.

Figure 7. This is the hand operated machine used to lower thermometers into the well. The depth is recorded in feet

(Continued on Page 82)

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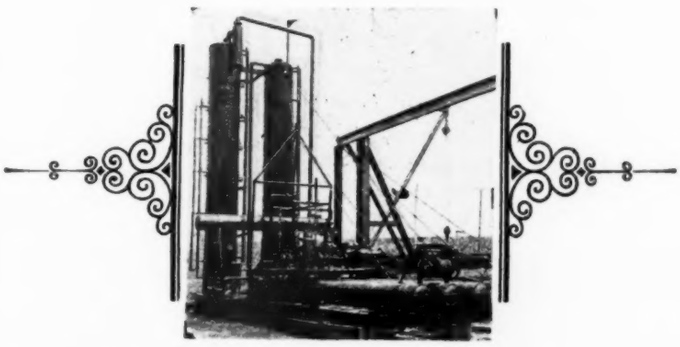

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CO-OPERATION NOT CONSPIRACY

Waste in and by the oil industry, it will be remembered, was the basis for the President's appointment of the Federal Oil Conservation Board. But, as replies to the questionnaires were received and the inquiry brought out the facts, less and less has been heard of that accusation and more and more of the actual conservation accomplished through the industry's continual effort for greater efficiency.

Now, on the eve of the oil board's report to the President, there is a significant tribute to the efficiency of the industry in the special report published in this issue of The Oil and Gas Journal, as made to the Secretary of the Interior by Director George Otis Smith of the United States Geological Survey, one of the technical advisers of the conservation board, after a prolonged personal tour of a number of oil fields.

This report is specially valuable as showing how unfounded and unfair was the general indictment of the industry for wastefulness, but it is no less important for comments regarding co-operation within the industry.

The Oil and Gas Journal has persistently urged that the most practical path towards conservation of our oil resources can be thrown open by the removal of restrictions that hamper or prevent concerted action within the industry.

Oil men have long recognized this but have felt themselves barred by the possibility of anti-trust prosecution from taking the common-sense business course that would have minimized waste and increased efficiency.

They have been forced to submit to conditions they were prevented by law or the fear of hostile interpretation of law from dealing with effectively. They have had to put up with makeshift amelioration when they should have been allowed to apply the remedy they knew would cure the conditions complained of.

In periods of ruinous overproduction any suggestion of curtailment was met with the rejoinder that the attempt might lead to prosecution for violation of the anti-trust act. These cases are costly to defend and test cases were avoided, perhaps on the theory that it was better to bear the ills they knew than fly to others more uncertain.

Fortunately the more rational attitude of government towards business generally, in the past year or so, as something to promote for the general good rather than to handicap, is giving even the oil industry a chance to be heard.

Members of the cabinet and of the oil board have felt free more recently to speak of the industry as one to be encouraged and helped rather than hindered by governmental action. Director Smith's report is of that nature.

Speaking of one field where the competitive drive is "not giving operators even a new dollar for an old" yet depleting needlessly a district that will one day need that oil at a fair price, he says he found it agreed among leading operators that production should be curtailed but no one offered to stop pumping or even drilling. "Co-operative effort was not thought possible, yet the only hope seems to be in full and free discussion of their common trouble which may lead to some co-operative moves for relief."

But so long as law makers persist in regarding co-operation as conspiracy, what chance is there for relief?

Speaking of another field, Doctor Smith says "many of the larger companies with strong field organizations and adequate financial strength are conspicuously absent from drilling activity, evidently being desirous of limiting rather than expanding production. These stronger companies also have considerable shut-in production, a conservation measure that apparently is helping to stabilize conditions."

This is the view of a government official who is a practical man versed in the oil business. Contrast it with the politicians in Congress who could see in that sort of conservation only a scheme to keep up prices! Their one idea is that cheapness is so popular and their statesmanship goes no further than a vote-catching phrase.

They are not interested in conservation which would stabilize production and prices and assure the public of a supply of an essential commodity at a fair rate.

The political view is the shortsighted one of immediate personal advantage. The view taken by officials who take the long view of statesmanship looks to the general welfare of both the public and the industry upon which the public relies for its needs.

Doctor Smith, although himself a scientist, was most impressed by "the advances made in field practice, the wonderful progress in drilling technique in attaining both speed and depth and in the methods to safeguard oil sands from water."

Even more conspicuous, he notes, is the attention given to gasoline extraction from natural gas, a merited tribute to the natural gasoline industry which has contributed so notably to the conservation of our raw material and our finished product, "making satisfactory for motor fuel a quantity of gasoline equal to at least 20 per cent of the motor fuel of the country."

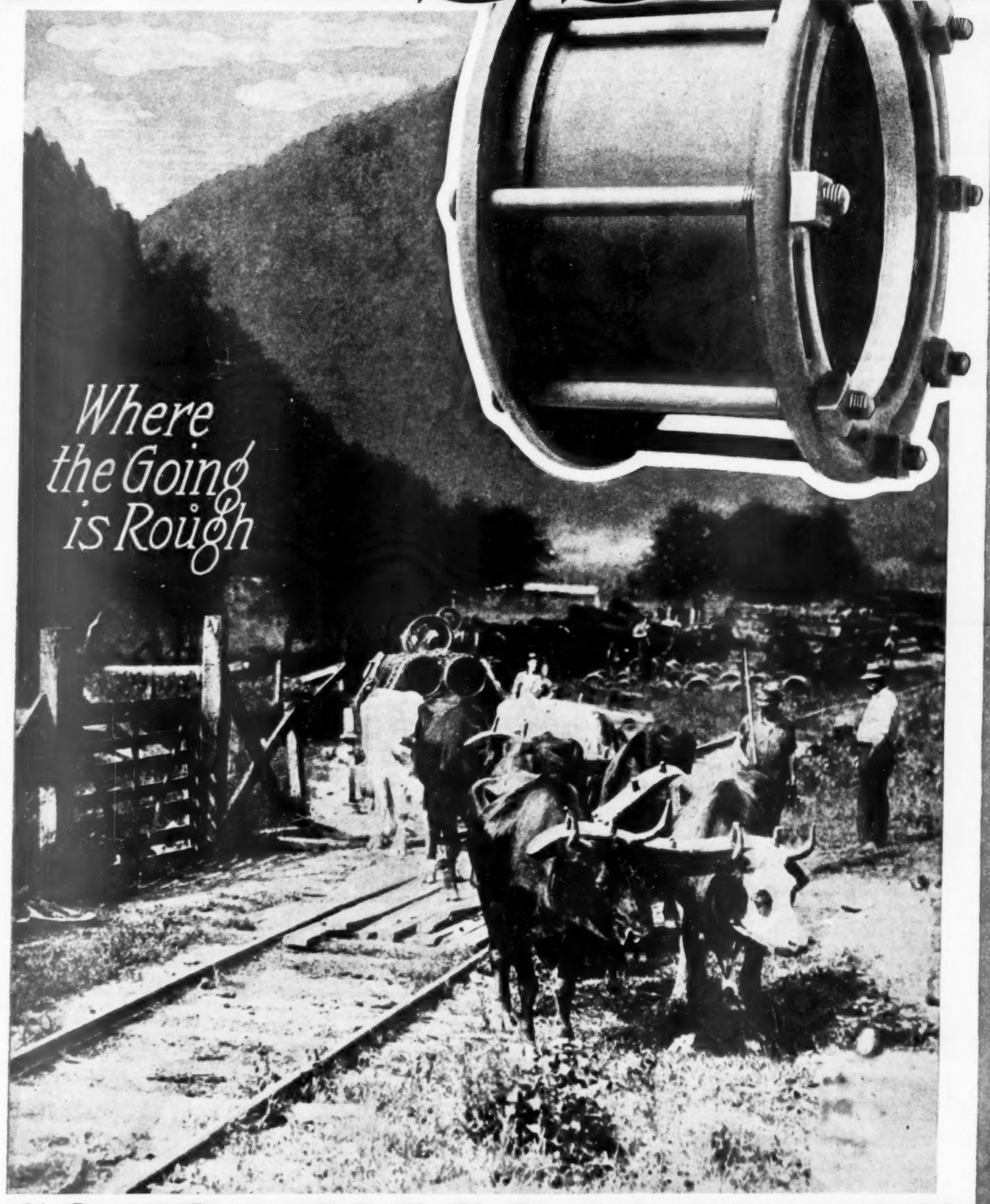
The use of gas for lifting oil in the Dominguez Field is cited as an "example of very practical conservation through the co-operation of oil companies that are seeking long-continued production rather than quick profits, with benefit to both the consuming public and the producing operators."

The Geological Survey and the Bureau of Mines have done much to assist the oil industry towards more scientific operations. But these governmental agencies have been limited by lack of adequate support from Congress, which has been more concerned about impeding the oil industry than helping it to serve the country.

Accusing the industry of wastefulness, Congress has refused to permit the very co-operation needed to avoid waste, affecting to fear that oil men could not be trusted to work for the public benefit. Doctor Smith's review of what the industry has been doing in practical conservation, all by itself and despite all the restrictions by which it is hedged, is very effective proof that oil men can and ought to be trusted to do what is best for the industry and for the public.

Gasoline, wherever and whenever it is wanted, at a price twenty million Americans can afford to pay, has been made possible by the oil industry's unremitting search for greater efficiency.

DRESSER



COUPLINGS DOMINATE

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

The Question and Answer Department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry. Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

TREATING NATURAL GAS CONTAINING HYDROGEN SULPHIDE

We are now constructing a natural gasoline plant through which we propose to process gas containing 7.3 per cent hydrogen sulphide. We would appreciate it very much if you would furnish us data regarding treating cost of sodium plubmite and lead sulphide process on gasoline of this nature.—L. A. B.

You will probably find it more economical to scrub this gas with water, caustic soda solution or milk of lime before passing it through the plant, and then make a final treatment of the extracted gasoline with sodium plumbite and the lead sulphide.

With the data you have furnished it would not be possible to estimate the treating cost. You may arrive at this by means of tests made in a small way. Knowing the cost of the materials and your labor expense you should be in a position to make an estimate which will prove reasonably close to that found for regular plant operation. While chemical analyses will give more accurate results, they are not always necessary in investigations of this kind because small hand batches will by actual trial give results from which satisfactory conclusions may be drawn. Of course it is necessary that you should have the sweetening solutions made up to some definite strength and in sufficient quantity to last for all experiments.

SULPHUR IN GASOLINE

What is the best method for determining the quantity of sulphur which may be present in gasoline?—S. G. C.

The A. S. T. M. method D 90-21 T. for sulphur in burning oils may be used for determining sulphur in gasoline. This test should be made by an experienced person and some slight modifications may be necessary.

The method involves burning the gasoline in a special lamp from which the gases of combustion are drawn through a solution which absorbs those containing sulphur. The quantity of sulphur thus absorbed is found by analysis of the absorbing liquid.

There is some danger of explosion when testing gasoline by this method, especially with the very high gravity product such as natural gasoline or that sometimes obtained from pressure stills. Dilution with a heavy oil which is free from sulphur reduces this danger.

The details of the method may be found on page 81 of Technical Paper 323-A, of the Bureau of Mines.

PURIFICATION OF WATER

Will you please tell me what to put in our reservoir to kill the green scum or plant growth which grows on the bottom and rises to the top in great sheets? The water is used for cooling water for Diesel engines and employes also use it for bathing.—M. O. B.

The water in reservoirs for city supplies has been successfully treated for this plant growth trouble by means of copper sulphate. This material, commonly known as blue stone, should be purchased in the crystalline or lump form. The usual way of shipping it is in burlap bags and 100 pounds makes a convenient size for handling.

One of the bags may be tied to a rope fastened on the stern of a rowboat, then if the boat is rowed around the pond until all of the copper sulphate has been dissolved a thorough distribution will be assured. For the first treatment it may be necessary to use a number of bags before results will be noticed, but once the growth has been gotten under control an occasional treatment will suffice to keep the water in good condition. If a very large quantity of the green scum is present it may be more economical to drain the pond, give it a thorough cleaning and when it is refilled apply the copper sulphate.

When copper sulphate has been used in the very small quantities required for killing the various forms of vegetable growth which find their way into water reservoirs, no harmful results have been reported from persons drinking the water so treated.

There is no danger in the green scum but of course it is objectionable and when it decomposes imparts a bad odor and taste to the water.

ENDPOINT OF GASOLINE

An actual test has revealed the fact that it is not possible to determine the true endpoint of a gasoline, when the distillation is made in the regulation flask, from a small volume of the gasoline. Why are endpoints determined in this way so much lower than those found from the standard volume of 100 c.c.?—W. F.

The present method for determining the volatility of the lighter products from petroleum, including gasoline, is based on the use of a specified flask which is designed to contain a charge of 100 c.c. If any other volume is distilled the results will not compare with those obtained when the correct volume is used in the flask. This is especially true for the initial and endpoint determinations.

When very small quantities are heated in the flask the bulb of the thermometer, as set according to the directions of the A. S. T. M. method, is so far removed from the surface of the boiling liquid that comparatively low temperatures are indicated. The neck of the flask is in fact a reflux tower and there must be appreciable cooling of the vapors before they reach the bulb of the thermometer just before passing out of the flask through the vapor tube. Maximum temperatures will be considerably lower and the product passing over much lighter than when the flask is filled with vapors which must be heavier when the volume distilled measures 100 c.c.

Repeated distillations in the standard 100 c.c. flask of a gasoline having an endpoint of 429 degrees Fahrenheit with a volume of 100 c.c., in which the volumes ranged from 20 c.c. to 90 c.c. may be used to illustrate how this change of volume influenced the endpoint determination:

Quantity Distilled	Endpoint
20 c.c.	384 F.
30 c.c.	399 F.
40 c.c.	405 F.
50 c.c.	412 F.
60 c.c.	416 F.
70 c.c.	422 F.
80 c.c.	425 F.
90 c.c.	429 F.

VISCOSITY OF KEROSENE

What is the meaning of a specification for viscosity of kerosene which shall be between 250 and 450 Saybolt?—I. T. P.

This is not a reference to the Saybolt Universal viscosimeter but to another instrument, the Saybolt Thermo-viscosimeter, because the viscosity of kerosene is entirely too low to be determined in the standard viscosimeter with its comparatively large opening in the tube. The thermo-viscosimeter is provided with a capillary tube for measuring the flow of the liquid.

The apparatus is not at all like the standard instrument. A definite volume of the kerosene is placed in a jar and this volume is put under pressure causing the oil to flow up the capillary tube when the pressure is released. The standard temperature for the test is 60 degrees Fahrenheit. The unit of the viscosity is one-tenth of a second, so a reading of 25 seconds would be equivalent to a Saybolt thermo-viscosity of 250. The reading is made on the basis of the time required for the kerosene to pass up a definite distance in the capillary tube.

This test is not of major importance because the lamp test and the distillation test furnish more reliable data from which the quality may be judged. A high thermo-viscosity indicates the presence of heavy oils, such as gas oil and lubricating stock, but these may be more conveniently detected by means of the distillation test and will also tend to produce smoke and deposits of carbon in the lamp.

A high-grade kerosene will usually test around 300 by this apparatus.

POWER ACCELERATORS IN GASOLINE

Can you refer me to any reliable source where I may obtain definite information concerning catalysists or accelerators which when added to gasoline will increase the power or mileage?—J. C. W.

Various substances have been offered for the purpose of increasing the power of gasoline but reliable data demonstrating their value is difficult to obtain. The United States Bureau of Standards has recently issued an announcement concerning such compounds as follows:

"The Bureau of Standards receives many inquiries as to the merits of what frequently are termed 'fuel dopes.' These are substances which, when added in small quantities to gasoline, are claimed to produce a fuel whose performance in internal-combustion engines is materially different from that of the untreated gasoline. Ordinarily, these substances constitute less than 5 per cent of the mixture. None of the more than 100 tests made at the bureau thus far has shown that the use of these dopes produced any appreciable improvement in power or fuel consumption, provided there was no detonation present when using the untreated gasoline. Such dopes as are beneficial derive their value from their influence upon detonation. Detonation is that phenomenon whose most familiar manifestation is the sharp ringing sound heard when an engine is badly carbonized or is operating with a too far advanced spark. Its consequences frequently are a loss in power, an increase in specific fuel consumption, and a tendency for the engine to overheat. Retarding the spark abnormally in order to avoid detonation may produce the same results. These consequences may be partially or completely prevented by the use of a dope which will decrease the tendency of the fuel to detonate. In so far as the experience of this bureau is concerned, this is the only manner in which a dope has been found to produce any appreciable improvement in either power or specific fuel consumption."

ETHER GASOLINE MIXTURES

Does the addition of ether to gasoline lower the power producing properties of the fuel? It is my understanding that while ether may aid in the starting of a cold motor it tends to reduce the power.—G. E. L.

It has been demonstrated that the addition of small quantities of ether to gasoline does aid in the starting of the motor. Similar results may be obtained from the use of natural gasoline.

Tests made with aircraft motors have indicated a higher efficiency for ether gasoline mixtures than when pure gasoline was used, notwithstanding the fact that the actual heating value of the mixture was less than that of the gasoline. Mixtures of this class, including alcohol, appear to have antiknock properties. It is thought that the low kindling temperature and rate of combustion are contributing factors in this action. The combustion of ether is complete and there is no deposition of carbon.

With the full consideration of these facts it appears that the action of the ether is continuous and therefore must have an influence in the production of power throughout the entire period that the motor may be in use.

TEMPERATURE FOR TAKING GRAVITY OF HEAVY FUEL OIL

Is there any standard temperature at which the gravity of heavy fuel oil should be taken? How can the refiner reconcile with the purchaser the wide difference in corrected gravity due to difference in the temperature of the oil when observed?—F. A. D.

So far as we are informed there is no standard temperature specified by any of the national organizations at which the gravity of fuel oil should be determined. It is presumed that all gravity determinations shall be made within the range published in the gravity tables of the American Petroleum Institute. The A. P. I. tables include gravity corrections which may be made at an observed temperature of 195 degrees Fahrenheit.

Many plant operators confine gravity determinations to a 10-degree range from a base of 125 degrees Fahrenheit. Should the oil become cool reliable determinations cannot be made without considerable loss of time. Should the gravity be determined under reasonable conditions there should be no great differences in the corrected gravity. Thorough mixing, which can be done only when the oil is quite thin, is of course essential. Whatever the temperature may be for obtaining a thin liquid must be had for making the observation with a hydrometer. The shape of the hydrometer and its length are important; also its accuracy should be known.

The determination of the gravity of a heavy fuel oil calls for some skill and special knowledge, so it is important that one of experience make this test.

advantages of Fernholtz Oil-Coke Briquettes

(1) High B.T.U. value, ranging from 15,000 to 15,500.

(2) Small ash content, 1.5%.

(3) No clinkers.

(4) Uniform size.

(5) Compact and hard, with no loss in fines.

(6) Do not absorb moisture.

(7) Will not disintegrate in open storage.

(8) Low cost of manufacture, *being made without a binder.*

(9) No smoke after igniting.

(10) No stoking required, remaining firm while burning.

(11) Not subject to spontaneous combustion while in storage.

(12) Ideal domestic and industrial fuel.

(13) Very practical and economical fuel for steam-rollers and portable steam power plants, due to high B.T.U. value, uniform size, absence of clinkers, and no smoke and ash content.

(14) Unlimited possibilities for smeltering purposes due to high B.T.U. value, low ash and low sulphur content.

(15) By dipping briquettes in distillate, which is immediately absorbed, they can be used to start a fire without using wood.

(16) By passing briquettes through a hot paraffin bath they can be handled without soiling the hands.

(17) For above reasons should bring a higher price than any other fuel on the market, with substantial profits to the refiner as a by-product.

Fernholtz installations are available for refineries producing 20 tons or more of oil-coke per day.

Ask for full data.

PORTER & COMPANY

Briquetting Engineers

629 So. Spring Street, Los Angeles, Calif.

Fernholtz Briquetting Process

Sensational New Wells Feature Week

Montana, Upton County in West Texas, Texas Panhandle and Spindletop, Texas, All Contribute Large Wells

This has been a week of big wells in several states. The Sunburst Field in Montana with a 4,000-bbl. well, the Upton-Crane area in western Texas with a 5,000-bbl. well, a brace of 1,000-bbl. wells in the Urania and the Caddo Field in Louisiana, a 5,000-bbl. well in Spindletop, in Jefferson County, Texas, are a few of the wells which appear to point at a possible production crisis later in the year. In the late field reports printed on this page are last minute reports of completoins of a character that point to an even higher production this calendar week than reported in this issue for the week ending last Saturday.

The Seminole Field in Seminole County, Oklahoma, is generally believed to be the prospective big field of Oklahoma later in the year. The Amerada Petroleum Corp. and Gardner Petroleum Co.'s No. 1 Rentie, in Section 23-9-6, now producing from the Hunton lime, but drilling on down for the Wilcox, is the most closely watched well in the state, for if it is a big Wilcox sand producer it may open a mile of territory to production.

The Dixie Oil Co. completed a sensational well in No. 4 Hughes in Upton County, western Texas. The well made 390 bbls. in an hour after it was placed under control and was reported on Tuesday as a 5,000-bbl. well, producing 33.8 gravity oil.

In the Texas Panhandle, where production passed the 100,000-bbl. mark last week and threatens to increase this week, a number of big wells were completed. A considerable number of the completions were shut in because of a lack of pipeline facilities. The McMan Oil & Gas Co.'s No. 1 Johnson Martin Gray, in Hutchinson County, increased to 5,000 bbls. a day when the tools were removed. The Marland Oil Co.'s No. A-4 Johnson, in the same county, was shot, and the well increased its production to more than 8,000 bbls. a day. The Skelly Oil Co. completed a brace of wells starting at better than 2,500 bbls. naturally. Phillips & Heywood's No. 1 Smith was shot and made 3,500 bbls. in 12 hours and then was shut in for tankage.

In North Louisiana O. W. Clark's No. 5 Harper, in the Urania Field started at 1,000 bbls., but fell off rapidly when water broke in. Thomasson and others' No. 1 Muslow Oil Co. fee in the Caddo Field is a 1,000-bbl. well producing heavy oil.

In the wonderful Spindletop deep sand area, the Yount Lee Oil Co.'s No. 8 McFaddin, a 10,000-bbl. initial producer has been choked down to 3,000 bbls., but the Gulf Production Co. finished a 5,000-bbl. well in No. 1 Jack-Duff.

Montana's star producer was drilled by the Homestake Exploration Co. in Section 36-35 2 in the southwest extension of the Sunburst Field. It was estimated at 4,000 bbls. but was flowing wild when the report was submitted.

OKLAHOMA

Magnolia Petroleum Co.'s No. 2 Owens, SW cor. NE SW, Section 8-15-6, made 320 bbls. from sand at 4,066-76 feet.

Marland Oil Co.'s No. 1, SW cor. SW, Section 12-20-4w, has 800 feet of water in the hole from sand at 4,210-15 feet. In the Blackwell district, No. 1-A Gaylor, NE cor. SW, Section 19-27-1w, had 12,000,000 feet of gas in sand at 2,430-35 feet. This is below the big gas usually found at a depth of 1,800 feet.

In the Seminole Pool, the Amerada Petroleum Corp.'s No. 1, SE cor. SW NE, Section 23-9-6, is drilling at 4,075 feet and the Wilcox sand is expected within the next 75 feet. The log of the well is comparing very well with the log of the Independent-Garland well in Section 26-9-6, and great hopes are entertained for the Amerada well.

In Payne County, the Gypsy Oil Co.'s No. 1 Martin, NE cor. NW, Section 27-18-3, is dry and abandoned at 4,725 feet owing to a fishing job.

The first Wilcox sand production in the Ripley Pool was found in the Mulberry Oil Co.'s No. 4 Sharrum, NW cor. NE, Section 5-17-4. Sand was 4,128-32 feet, and the well is flowing 9 bbls. an hour.

KANSAS

In Butler County, the Phillips Petroleum Co.'s No. 7, NE cor. SE SE, Section 7-27-6, had sand at 2,937-92 feet and made 280 bbls. the first 18 hours after a shot of 100 quarts.

In Reno County, Tatlock and others' No. 1 in Section 30-26-6w, had the Wilcox sand at 4,152-96 feet with a hole full of water at the deeper figure.

EAST CENTRAL TEXAS

The production of the Nigger Creek Pool in Limestone County for the 24 hours ending Tuesday morning of this week was 13,078 bbls. from 12 wells.

CALIFORNIA

LOS ANGELES, Calif., Aug. 24.—The Miley Petroleum Co.'s No. 1 Pacific Electric, in the southwest extension of Huntington, came in flowing 450 bbls. of clean 21 gravity oil from sand at 3,108 feet. This is the second well finished in this area but another is expected within a day or two.

WEST TEXAS-PANHANDLE

FORT WORTH, Tex., Aug. 24.—The Dixie Oil Co.'s No. 4 Hughes in Upton County flowed 390 bbls. the first hour after it was got under control. The gravity of the oil is 33.8 degrees. The top of the pay and total depth is 2,180 feet. It is reported the well is making 1¾ per cent water. This production, 230 feet in the iime, topped at 1,950 feet, is the deepest in that territory except The Texas Company's No. 1-F Union Land. The total depth of the Dixie Oil Co.'s No. 2 Hughes is 2,049 feet.

The deep horizon in No. 4 Hughes has flowed sulphur water in other parts of Upton County.

The Humble Oil & Refining Co.'s No. 1 Ricker is preparing to deepen at 1,980 feet. It had the top of the lime at 1,955 feet, 23 feet higher than the Dixie's No. 4 Hughes. It has been standing several weeks with 1,200 feet of oil in the hole.

The Gulf Production Co.'s No. 3 McElroy swabbed 232 bbls. the first 24 hours and is drilling at 2,758 feet.

The Texas Company's No. 3 King was deepened 6 feet. It swabbed 737 bbls. the last 24 hours.

Freight congestion on the Orient Railroad rivals that in the Panhandle. It is hard to get material in for new wells.

In Hutchinson County, the Skelly Oil Co.'s No. 3 Johnson, NW cor. Section 20, Block Y, is flowing 100 bbls. an hour naturally. The top of the lime is at 2,926 feet and the well is drilling at 2,935 feet. Marland Oil Co.'s No. 7 Whittenburg-A, is flowing 100 bbls. hourly after a 70-quart shot at 2,923-75 feet. The Marland company is going ahead with its shooting program. Production in the Panhandle should rise again next week.

MORE SPINDLETOP GUSHERS

HOUSTON, Tex., Aug. 24.—The Rio Bravo Oil Co.'s No. 4 T. & N. O. right of way, Spindletop, is flowing 4,000 bbls. at 2,634 feet, 29 degrees gravity. The Yount-Lee Oil Co.'s No. 5 fee is flowing 3,000 bbls.

The Gulf Production Co.'s No. 3 Mau, on the west side of the deep sand area was completed Monday morning and is flowing 6,000 bbls. a day, at 3,800 feet. The oil is 27 degrees in gravity. Seven of the Yount-Lee Oil Co.'s 55,000-bbl. steel tanks are nearing completion and that company will start storing its own production this week. The Gulf Production Co.'s production there was 18,000 bbls. yesterday morning.

LATE WELLS IN MEXICO

Late completions in Mexico include the Marland Oil Co.'s No. 46 Limon, total depth 1,845 feet, 2,500 bbls. initial production; Mexican Petroleum Co.'s No. 77 East Dicha, total depth 1,805 feet, 2,500 bbls. the first 24 hours; Transcontinental Oil Co.'s (Standard Oil Co. of New Jersey) No. 27 Barberena, total depth 1,550 feet, 1,500 bbls. initial production.

Production of the Mexican fields for the week ending August 14, averaged 217,857 bbls. a day, a decline of 7,428 bbls. a day from the output of the previous week. The production for the same week in 1925 averaged 260,571 bbls. a day. Current light oil production is 82,428 bbls. a day and heavy oil, 135,428 bbls. a day.

WILDCAT FAILURES IN SAGINAW

SAGINAW, Mich., Aug. 24. — The wildcat venture of Jack Hendricks and others of Detroit, on the Leonard Gearinger farm, on the Bay Road, just north of the Bay County line and about 5 miles north of the Saginaw Field proper, failed to find any showing of oil in the Berea sand, and, according to advice, will not be sent down to the lower formations, but abandoned.

Joseph H. Shaltry and others have what shows for a failure in No. 1 on the Fred Pagel property on McEwen Street west of the Bay Road. This well was drilled into the Berea and given a shot with 60 quarts of nitroglycerin and when the bailer was run failed to even show the color of oil. The owner concluded to let the well stand for a short period before pulling the casing and plugging the hole.

It looks very much as though the important test of the Gordon Petroleum Co., on the Schwannecke farm, Section 33, Buena Vista Township, Saginaw County, and approximately 5 miles southeast of the present producing area and southeast of Saginaw on the Hess Road, which failed to find pay in either the Berea or Saginaw sands, went into the Dundee sand and failed to find any showing worth while at 80 feet in that lower formation. The company has little hopes of a commercial producer at this time. The top of the Dundee sand was found, according to advice, at 2,908 feet. The drill will be kept going until oil or water is encountered. The Shaltry well got the top of the Berea at 1,869 feet and was drilled 16 feet in.

The next wildcat of interest to come in is the well of Charles Murrin on the Owens farm, on the banks of the Tittabawassee River, 5 miles west of production.

The Ohio Oil Co.'s No. 1 on the Mershon-Eddy Parker property, the farthest well to the east in the field, showed an initial production of 22 bbls. from the Berea sand and is evidently near the apex of the structure, being the shallowest well so far in the field.

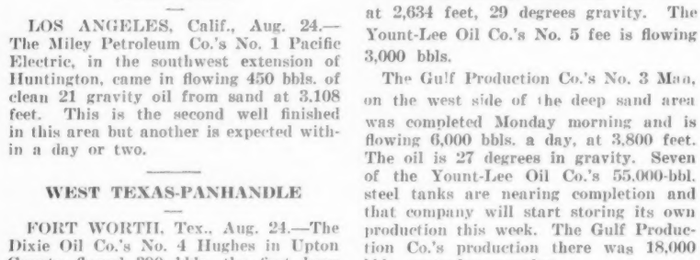
GULF COAST RESULTS

HOUSTON, Tex., Aug. 23.—The Humphrey Corp.'s No. 1 Oxford-Kelly, in the deep sand section at Sour Lake, is completed and flowing 2,200 bbls. initial at 3,784 feet. Early reports said this well was preparing to test at 3,484 feet. The depth should have been 3,784 feet. The gravity is 37.5 Baume.

The Gulf Production Co. completed two wells in the Hull Pool on the southeast flank of the dome. No. 70 Phoenix is heading 400 bbls. at 3,375 feet and No. 71 Phoenix is flowing 2,500 bbls. at 3,470 feet.

The Gulf Co.'s No. 2-A Smith at High Island, reported making 500 bbls., is now heading 150 bbls., flowing from open hole.

MOVE HOMES TO DRILL FOR OIL



One of the many houses in the southwest extension of the Huntington Beach Field in California which is being given a ride in order to make available additional space for drilling operations

5,000 Bbl. Well On Upton-Crane Line

Dixie Oil Co.'s No. 4 Hughes Blew in Monday. Twelve Miles North Gulf Brings in Good Well on McElroy Block

By C. D. Lockwood
Staff Correspondent, North Texas Fields

FORT WORTH, Tex., Aug. 23.—A 5,000-bbl. well in the Hurdle district on the Upton-Crane County line, just 660 feet southeast of the Dixie Oil Co.'s No. 2 Hughes, proved to the skeptics that the latter excellent producer was not a freak, or at least it is due to have company. The new gusher is Dixie Oil Co.'s No. 4 Hughes, located 1,456 feet southeast of the NW cor. and 330 feet northeast of the southwest line of the William Teer Survey No. 4. It blew in Monday morning at 7:15 and while no accurate estimate was obtainable, scouts reported that it was conservatively judged to be good for 5,000 bbls. The depth reported is 2,180 feet, and considering the fact that the tools are still in the hole there seems little doubt that this well is going to establish a mark for all others to shoot at in west Texas, outside of the Big Lake Field.

Dixie Oil Co.'s No. 3 Hughes, a location due north of No. 4, swabbed 300 bbls. at 2,042-77 feet and the Independent Oil & Gas Co.'s No. 2 Emma Wooley, south offset to the Dixie's No. 2 Hughes, was good for only about 30 bbls. in the same pay. It is now being drilled deeper in the hope of picking up better production in a lower horizon. The Texas Company's No. 3 King, north offset to the Dixie's No. 2 Hughes swabbed 793 bbls. Sunday at 2,045-58 feet. The Independent Oil & Gas Co.'s No. 3 Emma Woolley offsets the Dixie No. 4 Hughes to the south and its completion will be watched with no little interest.

Five Miles of Production

About 12 miles north of this active spot, the Gulf Production Co. is bringing in another well on the McElroy block. The new one is No. 3 J. T. McElroy, SE cor. NE. Section 203, Block F, just half a mile north of the discovery well. No. 3 flowed 130 bbls. from sandy lime at 2,721-53 feet between 7 a. m. and 4 p. m. Sunday. It looks as good as No. 1 and the fact that it is half a mile away in the direction of the Magnolia Petroleum Co.'s Church & Fields' producer leads some reliable and conservative operators to wonder if it could be possible that the whole 5 miles of territory will be productive. In the meantime, the Magnolia Petroleum Co. is doing what it can on the north end to prove the truth of the theory by getting a producer southeast of its old discovery, in the direction of the Gulf's McElroy well. This is No. 1 O'Keefe (University) in the NW cor. of Section 38, Block 30. It has 2,000 feet of oil in the hole from pay at 2,982-3,013 feet and swabbed 60 bbls. Sunday.

This Crane-Upton district is rapidly proving itself the next great oil field of the Mid-Continent and a tremendous amount of crude may be expected from it.

In Crane County, Cranfill Brothers' No. 1 P. J. Lea, SW cor. Section 15, Block 32, School Lands, topped the salt at 980 feet and was drilling at 1,075 feet in salt.

In Ector County, Henry Zweifel's No. 1 J. L. Johnson, Section 42, Block 43, T. & P. Survey, had reached total depth of 3,510 feet in anhydrite. J. S. Cosden and others' No. 1 W. E. Connell-B, center SW, Section 16, school land, Block B-16, had also reached a depth of 3,295 feet in anhydrite.

In the Burleson district of the Hurdle area of Upton County, Roxana Petroleum Corp.'s No. 1 Della Bowen, east offset to Marland's No. 12 Burleson, swabbed 110 bbls. in 12 hours from pay at 1,979-2,000 feet and was drilling at 2,050 feet with a hole full of oil. Judging by the showing made in the upper pay, as mentioned last week, this well should be a good one when it reaches the regular Burleson pay.

North Central Results

The north central Texas district contributed its usual quota of small wells, with a few wildcats that look like openers of small pools, but nothing of a sensational nature. In Cooke County, the Sun Oil Co.'s No. 1 Hyman, in the Thomas J. Moss subdivision, is estimated good for 200 bbls. at 1,164-73 feet, and therefore looks like the best producer yet to be brought in in that county. C. C. Lanier's No. 1 A. Hyman swabbed 70 bbls. in six hours at 1,275-82 feet and was estimated good for 60 bbls. on the pump. It is to be drilled deeper.

In Brown County, Dozier and others' No. 1 E. L. Cason opened up something northwest of Brownwood and the well looks good. It made 78 bbls. in 20 hours and had 400 feet of oil in the hole at 1,520 feet.

William Lester's No. 3 Fry was added to the new pool near Thrifty in northern Brown County, making 219 bbls. in the first 24 hours at 1,313-14 feet. This well is one location east of the discovery well and figures out 8 feet higher structurally. It also has more gas than No. 1 Fry which tested 50,000 feet. The Humble Oil & Refining Co.'s north offset to the discovery had sand at 1,307-10 feet good for 73 bbls. the first 12 hours. The Amerada Petroleum Corp. is building a gasoline plant in this pool.

In Callahan County, Bradstreet's No. 1 Sawyer Cattle Co., in the center of Section 798, G. M. Vigal subdivision, was shot with 40 quarts at 1,723-37 feet. It swabbed 5 bbls. before the shot and was being cleaned out afterward.

NORTH CENTRAL TEXAS
Estimated Production for the Week Ending August 21, 1926

	This Week	Last Week
Ranger District—		
Brown County	11,600	11,435
Callahan County	4,718	4,678
Coleman County	1,915	1,920
Comanche County	1,880	1,880
Palo Pinto County	446	456
Ranger County	5,840	5,560
Shackelford County	10,480	11,122
Stephens County	11,500	11,467
Total Ranger district	48,379	48,468
Wichita Falls District—		
Electra	15,964	15,861
Burkburnett	12,106	12,111
Iowa Park	4,200	4,216
Archer County	29,546	29,704
Clay County	577	556
Wilbarger County	14,468	14,230
Montague County	6,060	5,588
Young County	8,307	8,218
Jack County	225	229
Throckmorton County	2,240	2,572
Baylor County	161	195
Cooke County	266	126
Total Wichita Falls dist.	94,120	93,609
West Texas District—		
Big Lake Field	28,809	27,614
Crane County	728	676
Crockett County	1,156	1,025
Howard County	296	202
Mitchell County	3,665	3,596
Scurry County	46	48
Upton County	3,803	3,806
Total West Texas district	38,503	36,871
Grand total	181,002	178,948
Increase		2,054

Production in the north central and west Texas districts increased 2,054 bbls. last week, due largely to gains in west Texas, Montague County and a few other counties which made small contributions to offset losses in Throckmorton, Shackelford and Archer Counties where natural declines were responsible for decreases.

Montague on Upgrade

Montague County made another record this week, passing the 6,000-bbl. mark for the first time with an increase of 472 bbls. Throckmorton County dropped off to the extent of 332 bbls. daily, because of natural decline in the Humble Oil & Refining Co.'s No. 1 Stubblefield, north of Woodson, and the fact that no new producers were added to the field. Cooke County showed a substantial gain in proportion to its past production as a result of Hoosier's No. 1 Dennis being placed on production. The Humble Pipe Line Co. ran the first oil from this well August 12, taking 186 bbls., and the second run on August 14 took 138 bbls.

The addition of several new oil wells each week to the Cook Ranch Pool in Shackelford County fails to check the decline of old producers so this week's output of the county is down to 10,480 bbls., which is practically 1,000 bbls. under Stephens and Brown Counties. Some new producers in the Cross Plains Townsite Pool lifted Callahan County up about 100 bbls. to 4,718 bbls. for the past week.

West Texas contributed 1,632 bbls. to this week's gain over the previous seven-day period. Completion of Big Lake Oil Co.'s Nos. 70, 74 and 84 University for 350, 834 and 425 bbls. respectively accounted for most of that. The Dixie Oil Co.'s No. 2 Hughes in Upton County held up to 1,760 bbls. daily during the week, and the Gulf Production Co.'s No. 1 J. T. McElroy in Crane County held up to 520 bbls. daily to help do its share. The bringing in of Dixie Oil Co.'s No. 4 Hughes for an estimated production of 5,000 bbls. on Monday morning of this week and the completion of another well on the McElroy block by the Gulf Production Co. should lift the daily average production of west Texas considerable next week.

West Texas Comp'etions

Crockett County

Magnolia Petroleum Co.'s No. 1 Shannon was dry and abandoned at 4,372 feet.

Culberson County

The Pure Oil Co.'s Mrs. G. H. Quaid was dry and abandoned at 5,006 feet.

Mitchell County

The California Co.'s No. 6 H. C. Miller Lease 4, made 40 bbls. at 2,985-3,060 feet.

Reagan County

Big Lake Oil Co.'s No. 70 University pumped 350 bbls. from pay at 2,961-3,023 feet; No. 74 University flowed 834 bbls. at 2,835-2,908 feet. No. 84 flowed 425 bbls. at 2,938-56 feet. Marland Oil Co. and Mascho's No. 1 Sawyer Cattle Co. is dry at 3,202 feet and will be plugged. Texon Oil & Land Co.'s No. 38 University, Group 1, made 120 bbls. at 2,897-2,920 feet. No. 6-A pumped 75 bbls. at 2,910-15 feet.

Upton County

Dixie Oil Co.'s No. 6 Burleson pumped 45 bbls. at 2,108-48 feet. No. 3 E. S. Hughes flowed and swabbed 300 bbls. at 2,042-77 feet. Independent Oil & Gas Co.'s No. 1 Emma Wooley pumped 119 bbls. at 2,048-2,150 feet. Marland Oil Co.'s No. 9 Burleson was shot with 120 quarts at 2,112-53 feet and swabbed 40 bbls. while cleaning out. No. 10 Burleson swabbed 215 bbls. in 10 hours August 14, flowed 85 bbls. August 16 and 110

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SEVERAL REASONS FOR INCREASE IN FOREIGN GASOLINE CONSUMPTION

By L. M. Fanning
New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, Aug. 23.—While gasoline exports are small in quantity as compared with domestic consumption, the heavy increase in foreign shipments during the first six months of this year has been one of the strong features in the gasoline situation. During this period gasoline exports increased 45.5 per cent over the corresponding six months of last year, and an analysis of the gains made this year reveal that Europe has been the big buyer of additional supplies.

A gradual increase in European consumption of gasoline has been looked for with the growth of automobile use in these countries, but it was hardly expected that this would necessarily mean greater immediate purchases from the United States. The reason for this opinion was that foreign crudes and gasoline are getting into the European markets in greatly increased quantity, this affecting the demand from this country.

It would appear, however, from the first six months' figures that European requirements have expanded to such an extent that it has been found impossible to meet such increase fully from sources other than the United States. Apparently America as well as other producing and refining countries have been drawn on in greater amount.

That the expected increase in European gasoline consumption did not necessarily mean a larger demand for American products was borne out by the export figures for 1925.

The United Kingdom, in spite of its refining facilities, is a large importer of gasoline. Its refining industry is supplied chiefly with Persian crude oil and the gasoline yield from this oil has greatly reduced the gains that would have occurred in the importation of gasoline with the increased use of the motor car.

The effect of the influx of Persian crude and gasoline products from Sumatra and other foreign countries, on American gasoline has been apparent. In spite of the large increase in the total gasoline requirements of the United Kingdom, the United States in 1925 exported 8,237,000 bbls., as compared with 8,800,000 bbls. in 1924. In France, where consumption is also increasing, there was no gain recorded for exports from the United States in 1925 over 1924.

First Six Months

However, the first six months of 1926 tells a different story. Exports to practically all European countries showed an increase, in some cases a phenomenal increase. During this period 7,545,000 bbls. were exported to the United Kingdom, only 672,000 bbls. short of the total exports for 1925. During the first six months of 1925, gasoline exports to the United Kingdom were 4,017,000 bbls., showing for the 1926 period an increase of 87 per cent.

France, also, despite heavy Russian purchases and restrictive tariffs, was the point of destination for gasoline from the United States amounting to 47 per cent more for the first six months of 1926 than the same period in 1925. Exports were 4,552,000 bbls., against 3,088,000 bbls. Total gasoline exports to France in 1925 were 6,143,000 bbls.

Exports to Germany during the first six months of this year have practically

(Continued on Page 157)

Shut-In Wells Prevent Flood of Oil

Panhandle Reaches New High in Production and Average of Wells Is Up; Lack of Gathering Facilities Being Felt

By C. D. Lockwood
Staff Correspondent, Texas Panhandle

An increase of 13,875 bbls. in the daily output of Hutchinson County, a list of 39 new locations throughout the Texas Panhandle and a jump of 11 bbls. in the daily average output per well doesn't look much like a let-up in activities in what has been extravagantly referred to as the greatest oil field in the world. It almost literally sl'd past the 100,000-bbl. mark in production under its own momentum since numerous wells are shut in, and what it would be doing now were the pipe line situation normal is a subject for interesting speculation.

The sensation of the early part of last week was the McMan Oil & Gas Co.'s No. 1 Johnson-Martin Gray in Section 21, Block Y, which increased to nearly 5,500 bbls. when the tools were pulled from the hole. It had been flowing about 1,700 bbls. Then the Marland Oil Co.'s No. A-4 Johnson in Section 20 was shot and this Monday's gauge on that well showed 6,437 bbls. of oil; No. A-3 on the same lease made 850 bbls.; No. A-2 1,350 bbls.; No. A-3 Whittenburg made 1,000 bbls., No. A-5 made 4,122 bbls., and Monday No. A-6 Whittenburg came in for 140 bbls. an hour. Marland's Whittenburg A lease is just north of Section 20, Block Y.

The Skelly Oil Co.'s No. 1 Johnson, in Section 20, SE cor. NW, flowed 2,373 bbls. in 24 hours and was shut in for tankage. When the well was reopened, it refused to flow. However, it will probably be revived without trouble.

Big Well Shut In.

One of the best wells in the field in prospect is Phillips & Heywood's No. 1 Smith in Section 14, Block Y. This well was shot with 930 quarts at 2,930-3,063 feet on August 16, and it bridged. When the bridge was knocked out Monday it made 3,500 bbls. in the first 12 hours, filling all the available storage, and had to be shut in.

The Gulf Production Co.'s No. 1 W. S. Christian swabbed and flowed 147 bbls. after a shot of 230 quarts at 2,912-72 feet; No. 12 Dial flowed and swabbed 282 bbls. after a shot of the same size at 2,915-3,000 feet, total depth 3,012 feet; No. 22 Dial flowed 145 bbls. at 2,817.

RECAPITULATION

County—	First Reports	Drlg. Wells	S.D.
Carson	1	36	5
Collingsworth	...	2	1
Dallam	1	1	...
Donley	...	1	...
Gray	2	85	6
Hansford	...	1	1
Hartley	...	7	4
Hemphill	...	3	1
Hutchinson	33	378	28
Lipscomb	...	1	...
Moore	...	11	2
Ochiltree	...	2	2
Potter	...	4	...
Roberts	...	5	1
Sherman	...	1	2
Wheeler	2	14	7
Totals	39	562	60

DAILY AVERAGE PRODUCTION OF AMARILLO DISTRICT

Hutchinson County

Company—	Wells	Dy. Av.
Amerada Pet. Corp., J. A. Whittenberg	1	65
Amerada Pet. Corp., J. A. Whittenberg B-3		400
Amerada Pet. Corp., G. A. Whittenberg	1	15
American Refining Co.	1	100
Apex Oil Co.	2	220
Badger Oil Co.	1	50
R. C. Barnum	1	0
Canadian River Oil Co.	4	415
Canyon Oil & Gas Co.	1	4,200
Centerfield Oil Co.	1	0
Coble-Whittenberg	3	650
Currie Brothers & Phillips	1	1,500
Cockrell-McIlroy	2	1,200
Derby Oil Co.	2	125
Devonian Oil Co.	3	1,000
Dixon Creek Oil Co.	21	12,000
Double 5 Oil Co.	1	60
Douglas Oil Co. & Cline	1	20
Dunnigan et al	9	950
Echo Oil Co.	2	525
Empire Gas & Fuel Co.	4	785
Fly-Blackburn Oil Co.	1	300
Gates Oil Co.	4	270
Golding & Phillips	1	35
Gulf Production Co., Panhandle & Cline	18	3,900
Gulf Production Co.	11	4,840
Heywood et al	2	305
J. K. Hughes Development Co.	11	1,575
Holmes, Currie & McKnight	2	375
W. H. Holmes	1	215
Dan A. Japhet	1	550
J. H. Lennix	1	10
Lennix & Patterson	1	985
Lucky 10 Oil Co.	1	1,000
Marland Oil Co.	14	8,400
Midwest Exploration Co.	4	500
McMan Oil & Gas Co.	7	6,500
McIlroy & Herring	4	650
S. D. and W. W. McIlroy	3	935
McIlroy Brothers et al	3	300
J. H. Middleton	3	40
Murchison & Fain	1	400
Newby Oil Co.	1	25
New Domain Oil Co.	3	125
Phillips & Heywood	1	200
J. R. Phillips-Weatherly	1	25
Phillips Petroleum Co.	45	23,980
Prairie Oil & Gas Co.	10	2,295
Relief Oil Co.	2	555
Riley & Holmes	1	350
Roxana Petroleum Corp.	6	1,755
Ryan Petroleum Corp.	2	250
Shamrock Petroleum Co.	1	250
Skelly Oil Co.	7	1,185
Skiatex Oil Co.	4	1,470
J. L. Smith	1	65
Smith & Bynum	2	130
Spring Creek Oil Co.	3	950
Summit Oil Co.	2	430
Sunny Jim Oil Co.	5	850
Sunburst Oil Co.	1	410
Travelers Oil Co.	2	350
Triangle Oil Co.	1	1,650
J. D. Ward (Snell)	1	100
J. D. Ward et al	1	0
Westex Oil Co.	5	3,085
White Eagle Oil & Refining Co.	10	1,850
J. O. Whittington	1	0
Total Hutchinson County	272	98,690
Average per well		363

Carson County

Amarillo Oil Co.	1	0
American Refining Co.	4	285
Gates Oil Corp.	1	20
Gulf Production Co.	12	500
Marland Oil Co.	11	1,665
W. W. Silk et al	2	75
Skelly Oil Co.	2	90
Sunny Jim Oil Co.	2	30
The Texas Company	9	210
Total Carson County	44	2,875
Average per well		65

Gray County

Empire Gas & Fuel Co.	1	20
Shamrock Petroleum Co.	2	1,225
Wilcox-Pampa Oil Co.	5	2,695
The Texas Company	1	10
Total Gray County	9	3,950
Average per well		440

Potter County

Amarillo Oil Co.	1	30

Wheeler County

Gibson Oil Corp.	2	175
Continental Oil Co.	1	80
Midwest Exploration Co.	3	20
Upham Gas Co.	1	0
Total Wheeler County	7	275
Average per well		39
Grand total Panhandle	333	105,820
Average per well		318
Average per well last week		307
Total Panhandle 4 weeks ago	229	70,405
Average per well 4 weeks ago		307

105,820 Bbls. Per Day.

Production in the Panhandle reached a new high figure of 105,820 bbls. daily during the past week with several large potential and actual producers shut in either part or all of the time, and with a number of tests on top of the pay, but shut down for storage or pipe line connections.

Twenty-four completions in Hutchinson County during the week averaged 578 bbls. per well and raised the county's output 13,875 bbls. daily. The Marland Oil Co.'s production was up 5,000 bbls. a day, due to the shooting of No. 4 Johnson-A, which made it a 5,000-bbl. well, and to the cleaning out and swabbing of several other wells.

The Phillips Petroleum Co. increased its lead over all other companies by gaining 1,750 bbls. daily this week, making its production in the Panhandle average 23,980 bbls. The McMan Oil & Gas Co.'s No. 1 Johnson-Martin Gray was good for 5,500 bbls., and helped that company's average considerably, although the effect was lessened by the fact that this well didn't start flowing at that rate until the middle of the fiscal week. E. J. Dunnigan and others are producing twice as much as they did last week, due to their No. 1 Johnson which increased to 1,200 bbls. when deepened from 2,920 to 2,950 feet. The Dixon Creek Oil Co. held steady at 12,000 bbls. solely because of pipe line and storage conditions, as four wells are now on the pay, but shut down. The Gulf Production Co.'s output is up 1,000 bbls. as a result of cleaning out and shooting wells on the Whittenburg-A lease.

Carson County Declines.

Carson County dropped down from 5,660 bbls. to 2,875 bbls. because the Marland Oil Co.'s No. A-3 Burnett failed to hold up to its large flow. It was making 950 bbls. Monday morning, and was also making about 6 per cent water. Other wells in this county also declined.

Gray County increased 400 bbls., due to the Wilcox-Pampa Oil & Gas Co.'s No. 4 Worley & Reynolds, which made 300 bbls., and also to the cleaning out of other producers.

Hutchinson County Completions.

Empire Gas & Fuel Co.'s No. 1-B Johnson, Section 21, Block Y, flowed 300 bbls. at 2,862-2,950 feet. Holmes, Currie & McKnight's No. 2 Smith, Section 12, Block Y, was shot with 390 quarts at 2,686-2,768 feet and swabbed 250 bbls. initially. J. K. Hughes Development Co.'s No. 10 Kingsland-A, Section 6, Block Y, flowed 150 bbls. at 2,740-2,806 feet. Dan A. Japhet's No. 1 Smith, NW cor. SE. Section 11, Block Y, was junked and abandoned at 2,863 feet; No. 2 in the NE cor. SE, was completed for 700 bbls. after a shot of 80 quarts at 2,760-2,820 feet.

Lucky 10 Oil Co.'s No. 2 Whittenburg in Section 11, Block Y, sprayed 50 bbls. at 2,784 feet and was shut down for pipe line; No. 3 was also shut down for connections at 2,673 feet. Marland Oil Co.'s No. 4 Johnson-A was shot with 45 quarts at 2,985-3,015 feet and flowed 250 bbls. an hour afterward. This is in the NW cor. SW NE of Section 20, Block Y. The same concern's No. 3 Dial-Perkins, NW cor. E half SE, Section X02, H. & O. B. Survey, was good for 400 bbls. after a 10-quart shot at 2,932-45 feet; No. 6 was shut down for pipe line at 2,668 feet; No. 7 at 2,705 feet and No. 8 at 2,705 feet; No. 1 Martha Reimer in NE cor. Section 29, Block 47, had a hole full of water at 2,998 feet and was plugging back to complete as a gasser. It had 4,000,000 feet of gas at 2,835-56 feet. Marland's No. 1 Weatherly-A in Section 19, Block Y, was shot with 60 quarts at 2,974-3,009 feet and made 80 bbls. afterward. Total depth is 3,025 feet. No. 2 J. A. Whittenburg-A in the SE cor. of Marland's tract north of Section 20, Block Y, and located in the Mary Whitley Survey, flowed 55 bbls. at 2,881-2,948 feet and was cleaning out to shoot; No. 7 J. A. Whittenburg-A along the north line of the same tract was shot with 20 quarts at 2,974-84 feet and made 600 bbls.

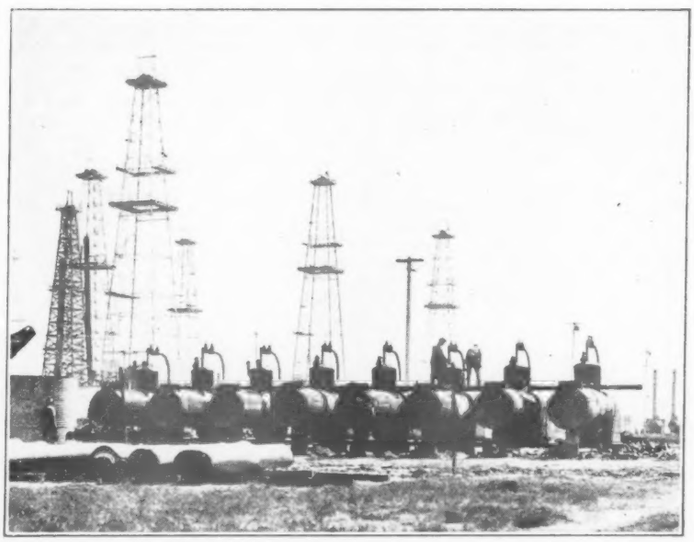
Phillips Petroleum Co.'s No. 1 Johnson-Stephens in Section 72, Block 46, was good for only 30 bbls. after an 80-quart shot at 2,796-2,862 feet; No. 1 Johnson-Neil, Section 68, Block 46, was shut down for storage at 2,704 feet; No. 1 Johnson-Montford, Section 66, same block, was pulling big pipe at 2,748 feet; No. 1 Johnson-Whitehead in Section 28, Block Y, was shut down for pipe line at 2,680 feet; No. 1 J. A. Whittenburg, Section 12, Block Y, was shut in as a gasser at 2,890 feet.

Phillips Petroleum Co. and Coble Oil Co.'s No. 5 J. A. Whittenburg Section 13, Block Y, was shot with 60 quarts at 2,907-31 feet and made 200 bbls. afterward, total depth being 2,960 feet; No. 13, shot with 100 quarts at 2,950-90 feet, made 1,000 bbls. initially, total depth 3,005 feet.

Phillips Petroleum Co. and Gibson Oil Corp.'s No. 1 Kingsland, in Section 4, Block Y, made 100 bbls. after a 100-quart shot at 2,798-2,849 feet; No. 5 J. A. Whittenburg, Section 63, Block 46, shot with 60 quarts at 2,855-95 feet, made 100 bbls., total depth 2,901 feet; No. 6, shot with 140 quarts at 2,690-2,753 feet, made 200 bbls.; No. 7, not

(Continued on Page 159)

HUNTINGTON BEACH ACTIVE



A battery of boilers being erected by the Standard Oil Co. of California on its Lease "B" adjoining the town lot section of Huntington Beach. This unit and another of similar size, also under construction, will be used in developing the company's holdings in the southwest extension.

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Write for Bulletin 2652

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Look for Mile Extension to Seminole

Amerada's Well in Section 23-9-6 Is Important. North Braman in the Limelight. Three Purchasers Storing Oil

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The local crude oil situation is rocking along with 3 out of the 10 major purchasers of crude running oil into steel storage. At this time about 35,000 bbls. daily are being withdrawn from stocks in Oklahoma and Kansas. This amount represents net withdrawal.

In the fields, the chief interest is still displayed in the Seminole Pool, in Seminole County, and North Braman, in Kay County. The former pool contains a greater number of operations, and is the more important of the two. At North Braman, the acreage is held by a few companies. The production of Braman shows an increase for the current week due to the application of air to the wells.

In the Seminole Field, the most observed well is the Amerada Petroleum Corp.'s No. 1 Rentie, SE cor. SW NE, Section 23-9-6. This well is making approximately 200 bbls. daily from the Hunton lime, and the formations are said to be running 20 feet high. The geological fraternity is very enthusiastic over the prospects of the Amerada well, and believe it will be a large producer. It is now drilling close to the Wilcox sand and should reach that stratum within a few days. If this well finds production in the Wilcox, it will mean that the region between it and the Independent Oil & Gas Co. and R. F. Garland well will be thrown wide open to drilling. The Amerada well is 1 mile north of the Wilcox sand production, and three-quarters of a mile west of the Hunton lime production in Section 24-9-6.

A very important development of the past week was the cutting of two wells in the north end of the pool. The wells affected by b.s. are the Prairie Oil & Gas Co.'s No. 1 Kincaid, and the F. J. Searight and others' No. 1, both in Section 33-10-6. The Searight No. 1 was the discovery well of the north end of the pool. Both of the wells are cutting only 3 per cent, but even this amount is interesting.

The Independent Oil & Gas Co. and R. F. Garland's No. 1 Fixico, SW cor. NE, Section 26-9-6, is holding up remarkably well. For the 24 hours ending Monday morning at 7 o'clock it produced 5,438 bbls. It must be remembered that this is the only Wilcox sand well producing in that field, and the remaining wells are making their oil from the Hunton lime. Should the finding of the Wilcox sand cover any appreciable area (and the steady performance of the Independent-Garland well indicates a good body of sand) another big pool is in process of development. For this reason the Amerada well is being watched very closely.

During the past week the Roxana Petroleum Corp. (which was about the only large company having no holdings in the field) purchased from the Kingwood Oil Co. of Okmulgee, Okla., a half interest in the E half SE Section 22-9-6.

A well is being started on this lease, and it is the only cable tool well in the field; all other tests were started with rotary tools. A comparison of the drilling time on this well with the time required for the other wells will be of interest.

Production of Seminole Pool

The list of wells producing in the Seminole area is given below, with the daily production for Sunday of this week:

Township 9-6		
Company—	Wells	Prod.
Amerada	2	265
Barnsdall	2	1,377
Carter	1	60
L. T. L. Oil Co.	3	112
L. T. L. Oil Co.	2	311
Mid-Continent Pet. Corp.	1	1,255
Tidal	2	657
Tidal-Superior	1	7
Independent-Garland	1	5,438
Township 10-6		
Carter	1	2,765
Mid-Continent Pet. Corp.	1	798
Prairie	1	492
Searight	2	603
Total	20	14,140

Cleveland Sand in Payne County

A wildcat well in Payne County which has opened up a new Cleveland sand pool is the Roxana Petroleum Corp. and R. S. St. Germain's No. 1 Scott, SW cor. NE NW, Section 31-17-4, which topped this formation at 3,155 feet and has 2,000 feet of oil standing in the hole from a total depth of 3,166 feet.

In the North Braman Pool the Comar Oil Co.'s No. 1 Day, NE cor. SE, Section 20-29-1w, has decreased in production to 100 bbls. of oil and 50 bbls. of water and will be flowed by air. The tubing is being run. Ten days ago this well was making 1,000 bbls. Mid-Continent Petroleum Corp.'s No. 1-A School Land, SE cor. SW, Section 16-29-1w, was drilled 1½ feet deeper to a total depth of 3,493½ feet with no increase. The temperature of the oil arose from 82 to 88 degrees, and the well is still making 1,676 bbls. The big well of the field, Comar Oil Co.'s No. 5 Pribboth, NE cor. NW, Section 21-29-1w, is still making 6,300 bbls. daily. This well has shown a slight increase in temperature from 86 to 92 degrees.

The LaSalle and others' well in Pontotoc County is flowing again after a string of tubing and a packer were run. The well is No. 1 Copeland, NE cor. SW, Section 28 5-5, and it is making 55 bbls. daily.

North of Morris, a stray sand has been picked up in E. A. Hutchinson and others' No. 2 Harris, CNL S half SE, Section 1-14-14. This well found 4,000,000 feet of gas and 100 bbls. of oil in sand at 1,625-31 feet. The remaining wells in this section are producing from the Booth sand found at 1,100 feet.

Osage Completions

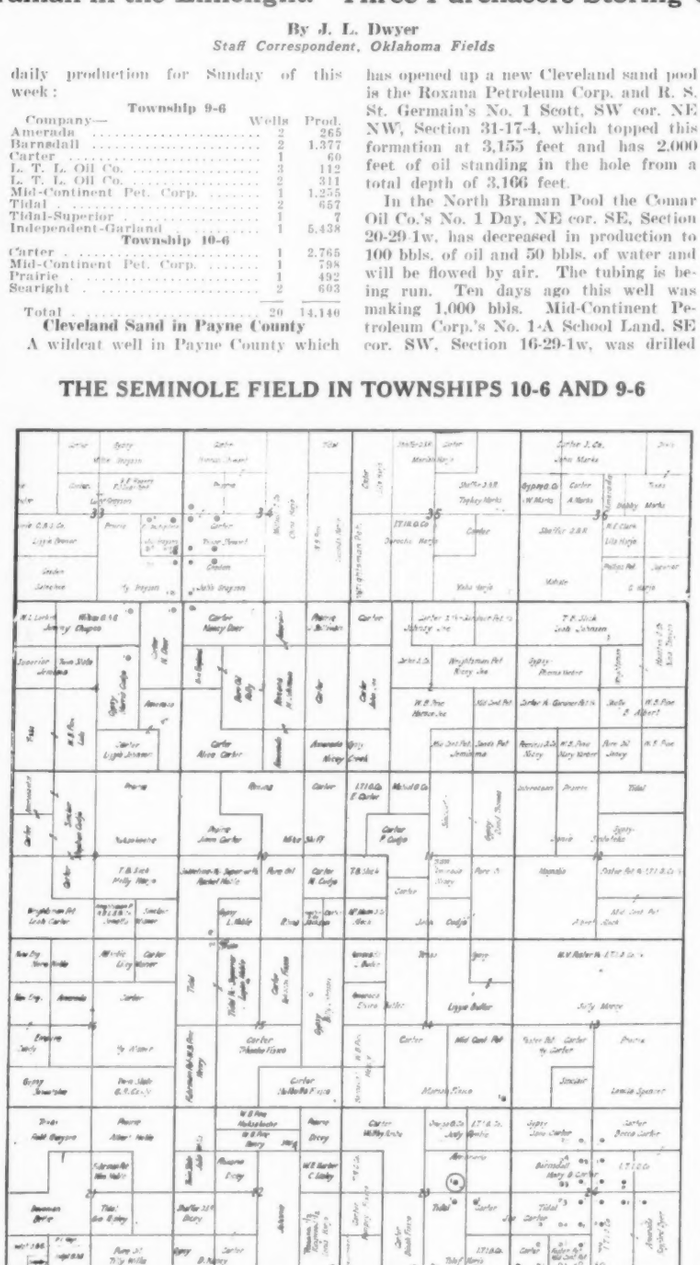
Completed wells in Osage County in the past week in review, together with the initial production of the oil wells, were as follows:

Keener Oil Co.'s No. 19, NE cor. SW NE, Section 15-29-10e, shot with 100 quarts from Peru sand at 990-1,016 feet, 10 bbls.; Barnsdall Oil Co.'s No. 41, NE cor. SE NW, Section 35-29-11e, shot with 160 quarts from Peru sand at 896-931 feet, 15 bbls.; R. G. Jennings' No. 4, NW cor. NE SE, Section 31-29-12e, shot with 60 quarts in Peru sand at 918-940 feet, 20 bbls.; Phillips Petroleum Co.'s No. 15, NW cor. NE NE, Section 12,27-5e, 600 bbls. after a 100-quart shot in sand at 2,939-95 feet; same company's No. 14, NE cor. NW SW, Section 7-27-6e, shot with 90 quarts in sand at 2,950-85 feet, 125 bbls. No. 16, NE cor. NE SW, same section, sand at 2,960-3,021 feet, 550 bbls. natural. Shot with 110 quarts at 2,965-3,007 feet, made 930 bbls.; No. 10, SE cor. NW SE, same section, after a 100-quart shot from sand at 2,954-3,006 feet, made 650 bbls.; No. 9, SW. cor. NW SW, Section 21-26-6e, made 375 bbls. after a 90-quart shot in sand at 2,931-78 feet. Skelton & Moore, CWL NE SW, Section 32-26-12e, shot with 120 quarts in sand at 1,552-94 feet, 15 bbls.; Prairie Oil & Gas Co.'s No. 8, NE cor. SE SE, Section 21-25-6e, was shot with 15 quarts at 2,720-34 feet, 150 bbls. Phillips Petroleum Co.'s No. 4, NE cor. NE, Section 28-26-6e, made 100 bbls. after a 40-quart shot at 2,715-35 feet. Carter Oil Co.'s No. 1 Wrightsman, SW cor. NW NE, Section 10-25-8e, dry and abandoned at 2,920 feet; Lewis Oil Co.'s No. 3 SW cor. NE NE, Section 30-25-8e, completed in the Burgess sand at 2,477-87 feet, for 372 bbls.; Arthur Oil Co.'s No. 25, SW cor. SE SE, Section 5-25-12e, shot with 100 quarts from sand at 1,689-1,718 feet, made 10 bbls. Tidal-Osage's No. 1, NW cor. SW NE, Section 20-24-9e, made 25 bbls. after an 80-quart shot at 2,225-49 feet; Winona Oil Co.'s No. 4, CEL SW SE, Section 27-24-10e, shot with 80 quarts at 1,331-50 feet, 15 bbls.; Sterling Oil Co.'s No. 7, NE cor. SE SE, Section 1-22-9e, shot with 110 quarts at 1,945-90 feet, 45 bbls. W. S. Mitchell's No. 3, NW cor. SW NW, Section 7-21-9e, shot with 60 quarts in a stray sand at 532-552 feet, good for 30 bbls.

New Work in Osage

Blackwell Oil & Gas Co.'s No. 1, SE cor. NW, Section 15-29-10e, is drilling at 200 feet; Phillips Petroleum Co.'s No. 6, NE cor. SW SW, Section 7-27-6e, drilling at 205 feet; Lewis Oil Co.'s No. 10, SW cor. SE SE, Section 21-26-6e, drilling at 150 feet; Prairie Oil & Gas Co.'s No. 12, CSL NE SE, Section

THE SEMINOLE FIELD IN TOWNSHIPS 10-6 AND 9-6



This map shows the three groups of wells which comprise the Seminole operation. The circle shows the Amerada Petroleum Corp.'s well in Section 23-9-6. This well is the most interesting, and it is now producing from the Hunton lime. Should it find production in the Wilcox sand, it will throw considerable territory open to the drill.

21-25-6e, is drilling at 400 feet; Lewis Oil Co. has a rig up for No. 4, NW cor. SE NE, Section 30-25-8e; Douglas Oil Co.'s No. 1, SW cor. SW NW, Section 5-24-8e, drilling at 180 feet; Twin State Oil Co.'s No. 2, NE cor. NE NE, Section 12-23-8e, drilling at 370 feet; Comar Oil Co.'s No. 1 SW cor. SW SW, Section 6-23-9e, drilling at 365 feet; Prairie Oil and Gas Co.'s No. 1, NW cor. NW NW, Section 7-23-9e, drilling at 625 feet; Pure Oil Co.'s No. 4 SE cor. NW NE, Section 25-22-7e, drilling at 320 feet. Kewanee Oil & Gas Co.'s No. 15, NW cor. SE NE, Section 5-22-11e, drilling at 150 feet; Tidal Osage Oil Co.'s No. 8, NE cor. SW SW, Section 15-21-12e, drilling at 700 feet; Sand Springs Home's No. 5, NE cor. NE NE, Section 5-20-11e, drilling at 525 feet; Riverland Oil Co.'s No. 1 NW cor. NW SE, Section 24-20-11e, drilling at 100 feet; Sand Springs Home's No. 2 SW cor. NW NE, Section 31-20-11e, drilling at 1,050 feet; Winona Oil Co.'s No. 8, SW cor. NE NE, Section 29-20-12e, drilling at 1,190 feet.

Kay County Completions

Carter Oil Co. and Ona Oil Co.'s No. 1 Shimp, SE cor. SE SW, Section 17-29-1e, Kay County, had the top of the sand at 2,307 feet, and at 26 feet in the sand flowed 333½ bbls. in 24 hours. Vernon Oil & Gas Co.'s No. 4 Brokehausen, SE cor SW SE, Section 17-29-1e, had the gas sand at 2,283 feet, estimated at 3,000,000 feet of gas. Top of the oil sand at 2,338-44 feet, made 199 bbls. the first 24 hours.

New Operations

The Texas Company's No. 5 Day, CEL SE NE, Section 20-29-1e, is a location; Comar Oil Co. is rigging up for No. 1 Bixby, NW cor. SE NW, Section 28-29-1w; Marland Oil Co.'s No. 2 Brokehausen, NW cor. NE SE, Section 17-29-1e rig; Carter Oil Co. and Ona Oil Co.'s No. 2 Bradley, NE cor. NW NE, Section 20-29-1e, drilling at 450 feet; Comar Oil Co. spudded No. 4 Lawrence, NE cor. SE NW, Section 5-28-1w; Ingram & Wilson rigging up for a Wilcox test in their No. 2 Coleman, NW cor. NW NE, Section 35-28-3e; Harold Petroleum Co., building rig for No. 5 Case, SW cor. NW SW, Section 4-27-1w; Blackwell Oil & Gas Co.'s No. 4 Jamison, SE cor. NE SE, Section 5-27-1w, spudding; same company's No. 2 Bracken, SE cor. NE SW, Section 8-27-1w, drilling at 520 feet. Prairie Oil & Gas Co.'s No. 5 Jones, CWL NW NW, Section 10-27-1w, spudding; A. D. Morton and others spudded No. 1 W. M. Keathly, NW cor. NW SE, Section 21-26-1e; T. B. Slick is building a rig for No. 1-F Endicott, C SW SW, Section 35-25-1w.

Pawnee County

Magnolia Petroleum Co. has a rig up for No. 1 Tucker, NE cor. NE SE, Section 10-22-3e; Stacey & Vaughn's No. 1 Wiley, NE cor. NW SW, Section 6-20-5e, is spudding. Josey Oil Co. has a rig on the ground for No. 6 Embry, SW cor. SE SE, Section 21-20-6e.

Watchorn Oil & Gas Co.'s No. 15 twin well, NE cor. SE SW, Section 33-23-3e, had sand at 1,980-95 feet and was shut in for 2,500,000 feet of gas. Champlin Refining Co. has a dry hole in No. 1 White, C SW SW, Section 19-20-6e, at 3,842 feet. Mid-Continent Petroleum Corp.'s No. 21 school land, CWL NE SW, Section 16-20-7e, made 67 bbls. initial production after a 20-quart shot in sand at 2,573-92 feet.

Garfield County

Mid-Continent Petroleum Corp. is rigging up No. 65 Walker, SW cor. NE SE, Section 13-22-4w, Garfield County, to drill deeper. In Section 18-22-3w, the Roxana Petroleum Corp. is rigging up No. 17 Schroeder, SW cor. NW SE, to drill deeper.

Sinclair Oil & Gas Co.'s No. 44-A Walker, CEL NE NE, Section 13-22-4w, had sand at 2,494-2,506 feet. It started at 315 bbls. a day.

Payne County

Mid-Continent Petroleum Corp.'s No. 1 Stevenson, SE cor. SW SE, Section 14-19-4e, Payne County, is dry and abandoned at 3,743 feet. Magnolia Petroleum Co.'s No. 4 Armour, SW cor. NW SE, was shot with 30 quarts from sand at 3,019-33 feet, made 110 bbls. initial production. Magnolia Petroleum Co. has abandoned No. 4 Richards, NW cor. SE SW, Section 32-19-7e, because of a bad casing job. Empire Gas & Fuel Co.'s No. 1 Hayes, NW cor. SW NW, Section 26-18-3e, had sand at 4,230-36 feet, and sand at 4,250-57 feet, made 125 bbls.; lime at 4,257-70 feet, sand at 4,270-86 feet, 835 bbls. Completed for 960 bbls. from all sands.

Magnolia Petroleum Co.'s No. 1 Martin, SE cor. SW SW, Section 5-19-5e, is spudding. Twin State Oil Co.'s No. 1 Moore, SE cor. SE SE, Section 15-19-5e, is a rig. Deep Rock Oil Co.'s No. 5 Barth, SW cor. NW NE, Section 26-18-3w, is spudding. Riverside Oil & Refining Co.'s No. 2 Riverbed, CEL SW SW, Section 5-18-7e, is drilling at 800 feet. Magnolia Petroleum Co.'s No. 4 Derrisaw, NW cor. NW SE SE, Section 32-18-7e, drilling at 1,485 feet. Shaffer Oil & Refining Co. is rigging up for No. 1 Swartout, SE cor. SE SW, Section 3-17-5e.

Logan County

Bailey, Zingery & Mote's No. 1 Baker, SE cor. NW NE, Section 5-17-1w, Logan County, is drilling at 300 feet.

Lincoln County

Wentz Oil Corp.'s No. 1 Lukenbill, SW cor. SW SE, Section 34-17-2e, is drilling at 1,700 feet. Magnolia Petroleum Co.'s No. 4 Owens, SE cor. NE SW, Section 8-15-6e, is spudding. Barnsdall Oil Corp.'s No. 1 Hayne, NE cor. NE NE, Section 21-15-7e, is a location. Olean Petroleum Co.'s No. 1 L. C. Brush, CEL NE NE, Section 36-15-7e, rig. Magnolia Petroleum Co. is rigging up for No. 1 Gillian, SW cor. SW SW, Section 8-14-4e. Same company is spudding No. 5 Mary Belless, CSL SW SW, Section 3-14-5e. The Texas Company's No. 1 Craig, SW cor. SW NW, Section 22-14-5e, is spudding. Prairie Oil & Gas Co. has a rig up for No. 1 White, NE cor. SW NW, Section 35-14-6e.

Lincoln County Completions

Magnolia Petroleum Co.'s No. 6 Thompson, CEL SE NE, Section 4-14-5e, was shot with 40 quarts at 3,452-64 feet and made 20 bbls. in 24 hours. Prairie Oil & Gas Co.'s No. 1 Martin, SW cor. SE SW, Section 8-14-5e, is dry and abandoned at 4,433 feet.

Okfuskee County

Gypsy Oil Co. is spudding No. 2 Harjo, C NW NE SE, Section 35-11-9e, Okfuskee County. Vierson and others' No. 1-A Barnett, C NW NW NE, Section 4-10-11e, is drilling at 870 feet.

Prairie Oil & Gas Co.'s No. 1 Grayson, CNL NE, Section 30-11-10e, was shut in for 3,000,000 feet of gas at 3,155 feet.

Hughes County

Magnolia Petroleum Co. is rigging up No. 1 Carliner, C NW NE SE, Section 27-8-8e, Hughes County. Robinson and others' No. 3 Carter, C SE SE NW, Section 17-8-10e, lost hole by fishing job at 1,372 feet, skidded rig and is rigging up.

Indian Territory Illuminating Oil Co.'s No. 1 Charles, SW cor. NW SW, Section 19-9-9e, is shut in a 7,000,000-foot gas well at 3,372 feet. Independent Oil & Gas Co.'s No. 2 Harjo, C SW NW SE, Section 26-9-9e, had sand at 335-40 feet, made 245 bbls. Ramsey Oil Co.'s No. 2 Sampson, C SE SE SW, Section 31-8-8e, plugged and abandoned at 3,665 feet. Magnolia Petroleum Co. has a dry hole in No. 1 Parker, C SW SE SW, Section 32-8-8e, at 4,130 feet. Producers & Refiners Corp. has a dry hole in No. 3 Long, C NW NW NW, Section 4-7-8e, at a depth of 4,174 feet. Dixie Oil Co.'s No. 4 Garner, C SW NE NE, had sand at 4,238-59 feet. It started at 813 bbls. In Section 5-7-8e, Independent Oil & Gas Co. and Atlantic Oil Producing Co.'s No. 3 Simon, C E half W half W half, had sand at 4,175-4,205 feet, and started at 400 bbls. In Section 5-7-8e, Magnolia Petroleum Co.'s No. 10 Skinner, CSL NW NW, Section 5-7-8e, was good for 1,192 bbls. initial production from sand at 4,156-72 feet.

Pontotoc County

American Oil & Refining Co.'s No. 2 Stringer, CEL NE SE, Section 34-5-6e, is a rig. Carter Oil Co. is building a rig for No. 1 Coone, SW cor. NE NW, Section 5-3-4e.

LaSalle's No. 1 Copeland, NE cor. NE SW, Section 28-5-5e, had sand at 2,195-2,356 feet, and made 275 bbls. intial production. Ada Development Co.'s No. 1 Lloyd, NW cor. SE NE, Section 4-3-6e, showed 5,000,000 feet of gas in sands at 847-52 and 948-55 feet and was shut in.

Grady County

Magnolia Petroleum Co.'s No. 1 Russell, NW cor. SW SW, Section 21-2-5w, Grady County, is a rig. Carter Oil Co.'s No. 3 Polson, SW cor. SW SE, Section 27-3-5w, is drilling at 326 feet. Magnolia Petroleum Co.'s No. 2 Mitchell, NW cor. NE NW, Section 34-3-5w, is drilling at 50 feet. Humble Oil & Refining Co. is moving in tools for No. 1 Cline, SW cor. SW SE, Section 27-6-5w. Seigler and others are rigging up rotary tools for No. 1 Seay, SE cor. SW SE, Section 34-6-5w. Witch-Texas' No. 1 White, NE cor. SW NE, Section 8-5-8w, is drilling at 500 feet.

Carter Oil Co.'s No. 1 Wham, NW cor. NW NE, Section 34-3-5w, was completed for 57½ bbls. from sand at 1,474-80 feet.

Garvin County

Wirt Franklin's No. 8 Pruett, SW cor. NE NW, Section 3-2-3w, is a rig. Humble Oil & Refining Co.'s No. 1 Richards, NE cor. SW SE, Section 3-2-3w, is drilling at 219 feet; Mid-Continent Petroleum Corp.'s No. 1 Runnels, NE cor. NE SW, Section 3-2-3w, drilling at 258 feet; Magnolia Petroleum Co.'s No. 3 Wilson, NE cor. NE NE, Section 21-2-2w, drilling at 205 feet; Humble Oil & Refining Co.'s No. 6 Lusk, NE cor. SE NE, Section 33-1-3w, drilling at 520 feet. Magnolia Petroleum Co.'s No. 3 Bumpass, NW cor. NE SE, Section 33-1-3w, drilling at 150 feet, and No. 5, SW cor. SE SE, drilling at 700 feet.

Wirt Franklin's No. 5 Pruett, NW cor. NW NW, Section 3-2-3w, swabbed 225 bbls. from sand at 2,327-47 feet, first 24 hours. Completed for 120 bbls. Magnolia Petroleum Co.'s No. 1-A, NW cor. SW NE, Section 19-1-3w, was completed for 15 bbls. Ripped pipe at 3,440-50 feet and 3,750-65 feet and 3,880-90 feet, no sand records. Humble Oil & Refining Co.'s No. 2 Snyder, SW cor. SW SW, Section 34-1-3w, had gas sand at 2,251-64 feet, estimated at 20,000,000 feet of gas and 267 bbls. of oil first 20 hours; 235 bbls. second 24 hours. Completed for 235 bbls.

Seminole County Very Active

Magnolia Petroleum Co.'s No. 2 Simpson, C NE NW SE, Section 10-9-5e, Seminole County, is swabbing 156 bbls. after a 10 and 20-quart shot in sand at 3,563-88 feet. Tidal-Osage Oil Co.'s No. 2 Mahardy, C SE NE SW, Section 24-9-6e, was completed for 840 bbls. in shale at 4,028 feet. Gypsy Oil Co.'s No. 1 Jefferson, C NE SW NE, Section 18-9-8e, was shot with 40 quarts from sand at 3,263-82 feet. It started at 95 bbls. Southwestern Petroleum Co.'s No. 4 Peters, C NW NE SE, shot with 40 quarts at 3,279-94 feet, 45 bbls. the first 24 hours. Wynona Oil Co.'s No. 1 Harjo, C SE NW NE, Section 18-9-8e, made 100 bbls. after a 40-quart shot in sand at 3,246-67 feet.

New Work in Seminole

Continental Oil Co.'s No. 9 Pierce, (twin to No. 2) C SE SW SE, Section 33-11-8e, is spudding for a shallow sand test. Rigs are up for Sinclair Oil & Gas Co.'s No. 10 Pierce, C SE SE, Section 33-11-8e; Prairie Oil & Gas Co.'s No. 2 Kincaid, NW cor. SE SE, and No. 3, SE cor. SE SE, Section 33-10-6e; Seawright and others' No. 4 Grayson, SW cor. NE SE, Section 33-10-6e; Mid-Continent Petroleum Corp.'s No. 2 Grayson,

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GOOD WELLS IN SUMNER COUNTY ATTRACTING KANSAS OPERATORS

By J. L. Dwyer

News from the Kansas oil fields during the past week was of a routine nature. There were no unusual completions. More interest is being shown in the Sumner County territory owing to the good production of wells completed in that area by the Roxana Petroleum Corp. at a depth of 1,800 feet. The sand in this region yields the production after the shot, like other areas of the state. In a time when deeper drilling is prevalent in so many fields, a spot where wells will swab 1,000 bbls. daily from this shallow horizon is a very attractive operating proposition.

Greenwood County Completions

Phillips Petroleum Co.'s No. 1 Nixon, SE cor. NE SE, Section 25-24-10e, Greenwood County, was shot with 90 quarts from sand at 1,823-48 feet, made 265 bbls. in 24 hours. Ward-McGinnis's No. 6-A Wiggins, SW cor. NE SW, Section 30-24-11e, made 200 bbls. after a shot of 100 quarts from sand at 1,819-47 feet. Manhattan Oil Co.'s No. 3-C Scott, NE cor. SE SW, Section 23-23-8e, shot with 60 quarts from sand at 2,572-2,626 feet, completed for 20 bbls. of 42 gravity oil and 40 bbls. of water. Manhattan Oil Co. and Phillips Petroleum Co.'s No. 3-B Scott, NE cor. NW SE, Section 25-23-8e, is dry and abandoned at 2,645 feet. Manhattan also has a dry hole in No. 25 Green, NW cor. NW SE, Section 10-23-9e, at a depth of 2,400 feet. Skelly Oil Co.'s No. 4, North, NW cor. NW NW, Section 15-23-9e, was shot with 160 quarts in sand from 2,339-92 feet, made 200 bbls. Pure Oil Co.'s No. 5 Oliver, NE cor. SE SE, Section 8-23-11e, shot with 160 quarts from sand at 1,967-2,003 feet, started at 50 bbls. Skelly Oil Co. and Sharpless' No. 1 J. W. Wilson, NE cor. NE SW, Section 23-23-11e, dry and abandoned at 2,080 feet. Syndicate Oil Co.'s No. 3 Fuller, SE cor. NW SW, Section 1-22-10e, made 100 bbls. after a 100-quart shot in sand at 2,001-59 feet. Theta Oil Co.'s No. 13 Pixley, SE cor. NE SW, Section 8-22-10e, shot with 160 quarts from sand at 2,290-2,-361 feet, made 65 bbls.

Allison & Fitzwilliams' No. 1-A Cross, SW cor. NW SW, Section 36-26-10e, is drilling at 250 feet. Phillips Petroleum Co. is moving in timbers for No. 3 Nixon, NE cor. SE SE, Section 25-24-10e. Prairie Oil & Gas Co.'s No. 1 Gaffney, SE cor. SE SE, Section 7-24-11e, is drilling at 610 feet. Manhattan-Harwood-Winters' No. 4 Lindamond, NE cor. SE NE, Section 19-24-11e, rig. Ward-McGinnis is rigging up for No. 9-B, NW cor. NW SW, and No. 10-B, SW cor. SW SW, is a rig. Both in Section 30-24-11e. J. B. Murphy's No. 2 Green, SW cor. NW NW, Section 14-23-9e, is a rig. Skelly Oil Co.'s No. 4 Green, SE cor. NE NE, Section 15-23-9e, is drilling at 470 feet. Mid-Continent Petroleum Corp. is moving in a machine for No. 7-A Dehlinger, NE cor. SE NE, Section 28-23-13e. J. H. Day's No. 4 Fuller, NE SE SW, Section 1-22-10e, is drilling at 415 feet. A. G. Hazlett, No. 22 Bitler, NE cor. SW SE, Section 12-22-10e, is a rig. Phillips Petroleum Co.'s No. 8 Warrenbert, NW cor. NE SW, Section 12-22-10e, is drilling at 120 feet. Skelly Oil Co. is spudding No. 14-C Prather, SW cor. SW NE, Section 20-22-10e. Empire Gas & Fuel Co.'s No. 12 Fromm, SE cor. NW NE, Section 14-22-11e, is drilling at 495 feet.

York State Oil Co.'s No. 13-C DeMalorie, NE cor. SW NW, Section 32-22-11e, is spudding. Simmons and others are rigging up No. 6-B Fankhouser, NE cor. NW SE, Section 4-22-12e. In Section 5-22-12e, Phillips Petroleum Co.'s No. 3 Gardner, SE cor. SE NE, is drilling at 790 feet. Simmons & Rhodes are moving in a machine for No. 1 Ott, SE cor. SE SW, Section 29-22-13e.

Cowley County

B. Shawver and others' No. 1 Beard, NW cor. NE SE, Section 17-34-3e, is drilling at 600 feet. Everett Dehart has spudded No. 1 Wirth, SW cor. SW NW,

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Two 1,000 Barrel Wells in Louisiana

Urania and Caddo Parish Come to Front With Good Completions. Wildcat Operations Are Disappointing

By James H. Dameron
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Aug. 23.—Two 1,000-bbl. wells, one in Caddo and the other in the Urania Field were the features of the week's field news.

Urania's 1,000-bbl. was on the Winn Parish side and was O. W. Clark's No. 5 Harper. The well flowed 1,000 bbls. of pipeline oil daily for three days when water cut into the oil and the production started falling rapidly.

At the present most of the interest in Urania is being held by the southern end of the field which extended the pool several weeks ago. Operators there have started in on a rapid development campaign and several tests will be down in a few days. Pipeline runs from the field show the oil is being carried out of there as rapidly as it is being produced. Last month the Louisiana Oil Refining Corp. had better than 50,000 bbls. in steel storage there and on the first of August there was less than 8,000 bbls. in that company's tanks. Better than 50,000 bbls. was in field storage on August 1.

The big excitement in Caddo was caused by Thomason and associates' No. 1 Muslow Oil Co. fee, in Section 31-21-15, which came in making 1,000 bbls. of 28 gravity oil from the chalk rock. The well fell off in characteristic manner of all chalk rock producers. In less than a week it was flowing 300 bbls. by heads and Saturday morning it had quit flowing and the operators were preparing to put it on the pump.

Stimulated Development

The well is near Oil City and in territory that has been heretofore passed up for chalk rock production. The bringing in of the well created more interest in that immediate territory and rigs for offsets are going in. Richardson Oil Co. and Thomason and associates are rigging up for offsets while other operators some distance away are to test the chalk rock for production on their way down for deeper producing horizons. None of the other fields in the district came through with anything out of the ordinary.

The Georgetown area in Louisiana and south of the Urania Field is establishing itself as a see-saw area of near greatness and near failure. Last week it had its downs so far as efforts to open a new field are concerned. The Texas Company's No. 1 Swope, Section 16-9-1e, which cored a rich sand at 1,573-81 feet and sent operators into a flurry of excitement and into buying more acreage around the test, was bailed down Friday night and Saturday morning it was standing with 1,400 feet of fluid in the hole, 1,200 feet of salt water and 200 feet of oil.

The test was shut down for orders Saturday morning. The operators may put the test on the beam and produce it or set a screen, and try to produce it.

In the wildcat territory in Union County, Arkansas, two tests were failures, one at 3,000 feet and another at 2,700 feet. Other tests in Union County that tested upper sands were failures and are going on down for deeper sands. In Lafayette County, near Bradley, where the Arkansas Fuel Oil Co. is trying with varied success to open a Blossom sand pool, another well was completed. It was a 40-bbl. producer.

The new completion marks the fourth producer there and strangely enough all four wells are in a direct line running north and south and flanked on either side by dry holes. Only one other test is drilling in that county and that is being put down by The Texas Company.

Along the Caldwell-Angelina flexure, two more failures were charged against Grant Parish, two in LaSalle Parish and one in Natchitoches Parish. Several new tests were started during the week and more locations made for other wildcats. The wildcat campaign along the flexure shows no sign of abatement and several major companies have quite a number of more tests to drill in accordance to agreements in their leases.

The Ohio Oil Co.'s No. 1 Cox, Section 23-21-10, in Cotton Valley, was shut down in red shale at 5,957 feet, and will not be drilled any deeper. The hole is to be plugged back to the deep gas sand below the 4,400-foot level and the well completed as a gasser.

Production the Same

Daily average production of the district rolled along about evenly when compared with the previous seven-day report.

Production by Fields

Arkansas	
Smackover, heavy	121,995
Smackover, light	14,800
El Dorado	7,045
Lisbon	8,997
Nevada	1,980
Stephens	1,855
Total	156,672
Louisiana	
Bellevue	2,120
Caddo, light	10,239
Caddo, heavy	2,659
Cotton Valley	7,950
DeSoto and Red River	4,112
Haynesville	9,500
Homer	5,500
Urania	14,220
Total	56,300
Total both States	212,972
Total last week	213,465
Decrease	493

Winn Parish put the life in the Urania Field report for the week with O. W. Clark's No. 5 Harper, Section 26-10-1e, which came in making 1,000 bbls. of pipeline oil at 1,488-1,500 feet. The remaining completions were on the LaSalle Parish side. Natural Gas & Fuel Corp.'s No. 2-M Urania, Section 19-10-2e, is pumping 50 bbls. from 1,564-68 feet, and No. 4-F Urania, Section 24-10-1e, is making 25 bbls. on the pump from sand at 1,551-55 feet. Mitchell and associates completed a pair, No. 1 Herbert, Section 26-10-1e, for a 50-bbl. pumper at 1,505-11 feet and No. 2 Herbert, for a 35-bbl. pumper from sand at 1,498-1,505 feet.

Due to the sharp increase in activity in the extreme southern end of the field, operations climbed during the week. Allen and associates' No. 1 Allen, SE E half SW SW, Section 23-10-1e, is a rig. Beckman and Freeman's No. 5-B Urania, Section 7-10-2e, is being bailed to test at 1,527-29 feet, and No. 6-B is drilling at 490 feet. Chal Daniels' No. 1 Urania, Section 2-9-1e, is spudding. Finn and House's No. 2 Smith, Section 26-10-1e, is drilling at 200 feet.

H. L. Hunt's No. 2 Griswold, Section 2-9-1e, is flowing salt water from sand at 1,495-97 feet and is to be plugged back in an effort to cut off the brine; 8-inch casing was cemented at 1,507 feet at No. 3. Henry Jones' No. 2 Taylor, Section 23-10-1e, cored lignite and pyrites at 1,597 feet. Keene & Woolf's No. 1 Griswold, Section 2-9-1e, is a rig, and No. 2, NE cor. NE SE, Section 3-9-1e, is being rigged. Same operators' No. 1-A Collins, Section 7-10-2e, in the north end of the field, tested salt water in 10 feet of broken sand topped at 1,524 feet. Louisiana Oil Refining Corp.'s No. 10-A Tremont, Section 35-10-1e, is drilling at 558 feet; No. 14-B Tremont, Section 25-10-1e, is waiting for a standard rig; No. 21-B in Section 30-10-2e is a rig. Louisiana's No. 2-C Tremont, Section 2-9-1e, is waiting for casing to set at 1,501 feet; surface casing was set at 101 feet at No. 3-C, SE cor. SW NW, and locations were staked for the following: No. 4-C, SW SE NW, Section 2-9-1e; No. 5-C, NW SW SE, Section 2-9-1e, and No. 6-C, SE SE NE, Section 3-9-1e. Montague Oil Co.'s No. 3 Zenoria, Section 11-9-1e, had sand at 1,501-03 feet and is waiting for a standard rig. McGaha and associates' No. 1 Urania, Section 5-10-2e, is drilling at 200 feet.

Natural Gas & Fuel Corp. is doing its share to keep Urania lively. No. 3-A Russell, Section 26-10-1e, is waiting for 6-inch to set at 1,531 feet; location was staked for No. 4-A Russell, 440 feet east and 200 feet east NW cor. SE SE, Section 26; location was made for No. 3 Frank Tullos, 20 feet north and 250 feet west SE cor. NW SE, Section 26; No. 3-M Urania, Section 20-10-2e, is coring at 1,531 feet and location was made for No. 4-M, SW NE SE, Section 19-10-2e. Ratcliff Oil Co.'s No. 1 Tremont, Section 30-10-2e, is a rig. Shreveport Oil Corp.'s No. 1 Pendarvis, Section 26-10-1e, is spudding. Six-inch was cemented at 1,519 feet at C. S. Thomas' No. 1 Urania, Section 18-10-2e. In the Urania extended are George W. Wetherbee and others' No. 3 Urania, NW SW SW, Section 2-9-1e, shut down at 300 feet; 6-inch stuck at 1,487 feet at No. 4, NW SE SW; a derrick is up for No. 5 Urania, NE SW SW, and a derrick is up for No. 1-B Urania, NE SE SE, Section 3-9-1e. Six-inch casing was cemented at 1,500 feet at Wooten and associates' No. 1 King, Section 36-10-1e. Six-inch was cemented at 1,507 feet at Yeary & Bristol's No. 3 Urania, Section 2-10-2e.

Bossier Parish

In the Elm Grove district, Palmer Corp.'s No. 2 Ellston, Section 20-16-11, is making 1,000,000 feet of gas at 1,934 feet. In the Bellevue Field, Louisiana Oil Refining Corp.'s No. 31-D fee, Section 15-19-11, is pumping 10 bbls. from sand at 391-93 feet. In the Bellevue Field, Autrey Oil Co.'s No. 5 Connell, Section 15-19-11, tested salt water at 455 feet and is to be deepened. Gulf's No. 20-A Bliss & Wetherbee, Section 15-19-11, is waiting on a standard rig at 420 feet. Six-inch was cemented at 361 feet at George W. Wetherbee's No. 13-A fee, Section 15-19-11; No. 14-A fee is drilling at 120 feet.

Caddo Parish

Caddo's stellar performer for the week was Thomason and associates' No. 1 Muslow Oil Co. fee, Section 31-21-15, which came in making 1,000 bbls. of heavy oil from the chalk rock at 1,615 feet. Bayou State Oil Co.'s No. 28 Hess, Section 24-22-15, was completed at 1,078 feet pumping 20 bbls. of oil. Double I. I. Oil Co.'s No. 7 Spell, Section 15-21-15, is pumping 5 bbls. at 1,740 feet. Galloway and associates' No. 1 Burglass, Section 15-21-16, is making 500,000 feet of gas at 2,340 feet. Standish Oil & Refining Co.'s No. 8 Allen, Section 23-22-15, was completed at 1,060 feet for a 20-bbl. pumper. The Texas Company's No. 4 Hicks & Payne, Section 21-21-15, was dry at 2,335 feet and was abandoned.

One of Caddo's deep tests is nearing the 5,000-foot level and another is below the 4,000-foot level. Dixie Oil Co.'s No. 1 Jolly, Section 27-22-15, is drilling in broken lime and shale at 4,222 feet. Gulf Refining Co.'s No. 1 Byrd, Section 2-19-14, is going through gray lime at 2,625

HUNDREDS OF NEW LOCATIONS IN CENTRAL TEXAS AND THE PANHANDLE

By C. D. Lockwood

FORT WORTH, Tex., Aug. 21.—New locations made for drilling wells in the north central, west central and Panhandle Fields of Texas are as follows:

Master Oil Co.'s No. 1 Sneed, 660 feet from north and west lines, Section 58, Block 6-T.

Potter County

Amarillo Oil Co.'s No. 5 Lee Bivins-A, center of NW, Section 25, Block O-18, D. & P. Survey.

Carson County

American Refining Co.'s No. 10 S. B. Burnett Estate, 330 feet south and west of middle north line of south half Section 115, Block 5, I. & G. N. Survey. Humble Oil & Refining Co.'s No. 1 S. B. Burnett, 450 feet north and east SW cor. west half east half Section 127, Block 5, I. & G. N. Survey. Marland Oil Co.'s No. 7 S. B. Burnett-A, 330 feet south and 990 feet west NE cor. north half of Section 116, Block 5, I. & G. N. Survey; No. 1 S. B. Burnett-A, 450 feet north and west of SE cor. Section 117, Block 4, I. & G. N. Survey.

Wichita County

Magnolia Petroleum Co.'s No. 12 B. F. Cook, 800 feet south and 975 feet east of NW cor. Block 28, Red River Valley Lands; No. 131 H. Reilly, 500 feet north and 950 feet west of NE cor. J. B. Johnson Survey, A-169, and located in L. C. Denison Survey, A-55. Proctor Oil Co.'s No. 1 L. W. Proctor, 150 feet north and west of SE cor. west 25 acres of L. W. Proctor 40-acre tract out of Block 35, Red River Valley lands. Simms Oil Co.'s No. 6 B. F. Dutton, 1,064 feet, NE of most westerly NW cor. and 225 feet SE of NW line of their lease out of Section 12, League 4, Denton County School Land, A-417. E. J. Stump & Co. and others' No. 3 W. H. Chilson, 12, Section 12, 150 feet south and 750 feet east NW cor. Section 12, League 4, Denton County School Land, A-417. Bridwell & Heydrick's No. 6 Ward & Todd, 150 feet south and east of NW cor. south 40 acres of Lot No. 13, Ward & Todd Subdivision and located in A. B. & M. Survey No. 11, A-339; No. 7 Ward & Todd, 150 feet south and 450 feet east of NW cor. south 40 acres Lot 13, Ward & Todd Subdivision located in A. B. & M. Survey No. 11, A-339. Compton Oil Co.'s No. 2 J. Hirschi, 150 feet north and east of SW cor. east half of north 60 acres of south 320 acres of David Cowan Survey, A-43. J. W. Culbertson Co.'s No. 42 J. L. and T. J. Waggoner, 1,716.9 feet south and 150 feet west of NE cor. Section 13, B. S. & F., A-343; No. 43 J. L. and T. J. Waggoner, 2,031.9 feet south and 150 feet west NE cor. Section 13, B. S. & F. Survey, A-343. Dale Oil Corp.'s No. 26 Grace Jennings, 520 feet north and 200 feet west of SE cor. NW NW, Section 12, H. T. & B. Survey, A-437. T. F. Hunter's No. 11 J. L. and T. J. Waggoner, 951.9 feet south and 150 feet east of NW cor. Section 1, G. C. & S. F. Survey, A-528; No. 12, 951.9 feet south and 450 feet east of NW cor. Section 1-G. C. & S. F. Survey, A-528; No. 13, 1,251.9 feet south and 450 feet east NW cor. Section 1, G. C. & S. F. Survey, A-528; No. 14, 1,251 feet south and 750 feet east of NW cor. Section 1, G. C. & S. F. Survey, A-528; No. 15, 1,251.9

(Continued on Page 130)

Significant facts of decision rendered in favor of the Moore Derrick (Neill patent) by the U. S. Court of Appeals for the Third Circuit.

FOURTH INSTALLMENT

(the last of the series)

"While the derrick of the patent, in view of its position in the art, is not a pioneer, and while it is not a great invention, yet it has in combination in a novel and useful way the qualities of simplicity, portability, durability and economy.

"We are of course aware that a mere summation of points of merit does not constitute invention any more than a mere aggregation of elements. Yet their presence in a markedly increased measure cannot be overlooked in estimating the utility of a device and in determining whether it produces new and useful results within the principle upon which patents are granted.

"These qualities do not separately appear to the same extent in any derrick shown to have existed before, and are not collectively found in any derrick at all.

"The recognition by the art of its new means and results, and the fact that the structure of the patent has largely replaced many structures of other designs, constitute persuasive evidence of invention and are proper matters to be put in the scale when invention is in doubt."

MOORE TUBULAR STEEL DERRICKS

Lee C. Moore & Co., Inc.
Established 1907
Pittsburgh, Penna. Tulsa, Okla.

feet. Gulf's No. 1-E Muslow, Section 35-21-15, is drilling in red shale streaked with lime at 4,830 feet. Magnolia Petroleum Co.'s No. 16 Dillon, Section 24-21-15, is drilling in lime at 3,180 feet, and No. 17 is in hard shale at 3,550 feet. Magnolia is fishing for the drill stem at 3,552 feet at No. 1 Spell, Section 29-21-15. Magnolia's No. 1 Wiley Bradford, Section 24-21-15, is drilling in lime at 3,744 feet. Casing was reset on a shoe at The Texas Company's No. 42 C. M. L. Co., Section 23-21-15, and the test is being swabbed at 3,724 feet.

The completion of a 1,000-bbl. well in Section 31-15-21, brought a new interest in that immediate territory and it is soon to be tested out while field operations in the remainder of the field continued at their usual gait. W. D. Chew's No. 5 State, Section 34-21-16, is drilling at 1,810 feet. Surface casing was set at 62 feet at Double I. I. Oil Co.'s No. 8 Spell, Section 15-21-15. Dixie's No. 78 Robertshaw, Section 14-21-15, is drilling in shale at 1,230 feet. On the Gulf's Ferry Lake lease two wells are waiting for standard rigs, No. 245, Section 22-20-16, at 2,262 feet, and No. 247 at 2,275 feet. No. 248, Section 15-20-16, is drilling in hard chalk rock at 1,659 feet; No. 249, Section 16, is drilling in rock at 128 feet; No. 250, Section 29-21-16, bailed dry at 2,300 feet and is drilling at 2,313 feet. Gulf's No. 7-U, Section 16-20-16, is drilling at 452 feet.

The liner is being set at 2,235 feet for a test at Morris Drilling Co.'s No. 1 Palo, Section 1-20-16. Six-inch casing was set at 1,475 feet at Ohio's No. 20 Smith, Section 12-21-15. Ramsey and associates' No. 1 Muslow, Section 32-21-15, is being plugged back from 2,100 feet to 1,700 feet for a chalk rock test. A derrick is up for Richardson Oil Co.'s No. 3 Louisiana Oil Co., 200 feet north and 1,220 feet east, center Section 31-21-15. Superior Oil Co.'s No. 4 Youree, Section 26-20-15, is waiting for a standard rig at 2,290 feet, and 10-inch was set at 80 feet at No. 5. A derrick is being built for The Texas Company's No. 64 Caddo L. B., 1,485 feet north and 200 feet west SE cor. Section 33-21-16, and a derrick is up for No. 40 C. M. L. Co., 1,120 feet south and east NW cor. Section 23-21-15. Same company's No. 48 C. M. L. Co., Section 26-21-15, is being bailed at 1,680 feet. Arrangements are being made to drill plug at 2,378 feet at No. 54 Harrell, Section 4-21-16.

Locations have been made for The Texas Company's No. 6 Herndon, 1,520 feet west and 400 feet north center Section 22-21-15, and for No. 7 Herndon, 660 feet north and 1,520 feet east SW cor. Section 14-21-15. Six-inch was cemented at 2,248 feet at The Texas Company's No. 3 Perry, Section 3-20-16, and No. 12 Russell, Section 3-20-16, is drilling. Thomason and associates' No. 2 Muslow fee, Section 31-21-15, is a derrick. Tholl Oil Co.'s No. 11 Bashara, Section 23-21-15, is drilling at 500 feet. Unity Petroleum Co.'s No. 1 Crystal, Section 13-21-16, is a rig and was erroneously reported drilling. Six-inch was cemented at 1,474 feet at Unity's No. 2 Crystal, Section 24-21-16. Eight-inch casing was cemented at 1,828 feet at Victor Wenzell's No. 1 Thomas, Section 15-20-15, and at 1,845 feet at No. 1 Wemple, Section 14-20-15.

Monroe District

Two gas wells with a combined production of 25,500,000 feet of gas were completed in the Monroe Field last week, both on Southern Carbon Co.'s leases, No. 49, Section 35-19-4e, was a 15,000,000-foot well at 2,178 feet and No. 5 Grayling, Section 21-21-4e, is good for 10,000,000 feet at 2,188 feet.

Feazell's No. 1 Archer, Section 22-20-4e, is drilling at 2,110 feet. Eight-inch casing was cemented at 918 feet at Natural Gas Products Co.'s No. 7 Tensas Delta, Section 2-21-4e. Standard's No. 1 Cooperage, Section 34-21-3e, is drilling in water sand at 910 feet. A rig is up for United Carbon Co.'s No. 1 Clarke, Section 26-20-5e. A fresh water flow at 375 feet is being killed at Gulf's No. 1 West Virginia, Section 17-17-5e. Six-inch was cemented at 2,157 feet at R. J. O'Brien's No. 2 Ray & Green, Section 35-9-4e. Ouachita Natural Gas & Oil Co.'s No. 2 D'Arbonne, Section 25-19-2e. Palmer Corp.'s No. 3 Cole, Section 43-19-4e, is drilling at 1,050 feet, and No. 1 Lynch, Section 18-19-5e, is drilling at 100 feet. Arkansas Fuel Oil Co.'s No. 1 Reeves, Section 14-20-1e, is drilling in lime at 4,275 feet. R. W. Rhodes' No. 1 Pickens, Section 22-22-2w, is drilling at 350 feet. Ruston Drilling Co.'s No. 1 Mayfield, Section 30-20-4e, is drilling at 1,870 feet.

Webster Parish

In the Shangaloo district, Magnolia's No. 1 J. S. Sexton, Section 32-23-9, was completed at 2,634 feet for a 4,500,000-foot gasser with 600 pounds rock pressure. In Cotton Valley, Magnolia's No. 2 Tiner, Section 21-21-10, was completed in sand at 2,554-55 feet pumping 22 bbls. of oil and 200 bbls. of salt water.

Humble Oil & Refining Co.'s No. 2 Cox, Section 22-21-10, is drilling in lime at 3,637 feet. Magnolia's No. 3 Tiner, Section 21-21-10, is drilling in broken lime and sand at 1,714 feet. R. W. Norton's No. 1 Josey & Massey, Section 27-21-10, is drilling in lime at 3,850 feet. Ohio's No. 1 Cox, Section 23-21-10, is drilling in red shale at 5,957 feet. Palmer Corp.'s No. 1 Crichton, Section 30-20-8, is shut down at 1,633 feet for water. Smitherman & McDonald's No. 1 Oakley, Section 29-23-11, is still fishing for the drill stem at 4,681 feet. Southern Crude Oil Co. and Ramsey's No. 1 Munn, Section 1-22-10, is lubricating with oil and trying to get the drill stem which stuck at 4,620 feet.

Union County

Failure of Smackover or Lisbon either to turn up anything big brought Union County, Arkansas, through another dull week. In Lisbon, Atlantic's No. 3 Ford, Section 3-17-16, is a 20-bbl. pumper from sand at 2,092 to 2,123 feet. Atlantic's No. 6 Goodwin, Section 16-17-16, is pumping 60 bbls. from sand at 2,117-87 feet. Gulf's No. 2 Parker, Section 21-17-16, is pumping 55 bbls. from sand at 2,112-24 feet. H. L. Hunt's No. 7 H. O. Murphy, Section 4-17-16, was good for 60 bbls. on the beam from sand at 2,070 to 2,138 feet. Lion Oil & Refining Co.'s No. 7-A Mitchell, Section 17-17-16, is pumping 15 bbls. from sand at 2,115-46 feet and No. 2-B Mitchell, same section, is making 1,000,000 feet of gas and 5 bbls. of oil from sand at 2,151-78 feet. Roxana's No. 2 Willett, Section 3-17-16, was a 76-bbl. pumper in sand at 2,060-77 feet.

In Smackover, Magnolia's No. 2 Childs, Section 8-16-16, is pumping 30 bbls. of oil from sand at 2,590 to 2,608 feet. Marine Oil Co.'s No. 1 Epps, Section 21-16-16, a semiwildcat, was abandoned without a test at 2,820 feet. Murdock and associates' No. 7 Vestal, Section 17-16-15, is making 25,000,000 feet of gas with 580 pounds rock pressure from sand at 2,789-93 feet. Southern Crude Oil Purchasing Co.'s No. 4-B Wells, Section 15-16-15, is flowing 70 bbls. of fluid, 70 per cent salt water, from 2,581-92 feet. The Texas Company's No. 4 C. L. Saxon, Section 4-16-16, is a 35-bbl. pumper in sand at 2,016-45 feet.

In the Lisbon Field, Easton and associates' No. 3 Mooty, Section 22-17-16, is waiting for 6-inch casing to set at 2,131 feet. Gulf's No. 3 Parker, Section 21-17-16, is drilling at 99 feet; No. 4 at 1,236 feet; No. 1 Patterson, Section 20-17-16, at 600 feet and No. 4 Primm, Section 21-17-16, at 2,097 feet. Humble's No. 1 Goodwin, Section 20-17-16, is drilling at 2,100 feet. H. L. Hunt's No. 8 Murphy, Section 4-17-16, is a rig. On the Lion's Mitchell lease in 17-17-16, No. 1-A, is drilling at 1,350 feet; No. 6-A was dry with a show of gas at 2,085 feet and is being cored at 2,100 feet; surface casing was set at 102 feet at No. 10-A; 6-inch was cemented at 2,130 feet at No. 11-A; No. 16-A is drilling at 2,137 feet; No. 5-B had sand at 2,150-78 feet and is waiting for a standard rig. Six-inch was cemented at 2,116 feet at Magnolia's No. 2 Halsey, Section 20-17-16; No. 3 is drilling in gumbo at 2,100 feet. Magnolia's No. 2 Slaughter, Section 8-17-16, had sand at 2,072 to 2,113 feet and is waiting for a standard rig.

J. L. Meek's No. 1 Milner, Section 15-17-16, tested dry with a show of oil and gas at 2,157-2,202 feet and is shut down for orders. Ohio Oil Co.'s No. 2 Stocks, Section 21-17-16, is drilling at 1,516 feet. Six-inch casing was cemented at 2,076 feet at J. D. Reynold's No. 5 Dumas, Section 15-17-16. A derrick is up for Reynolds and Marr's No. 2 Mooty, CEL, W half NW NW, Section 22-17-16. Rovenger Oil Corp.'s No. 7 Dumas, Section 9-17-16 had sand at 2,091 to 2,115 feet and is waiting for a standard rig and No. 8, SW cor. Section 9, is a rig. Rovenger's No. 1 Snydor, Section 22-17-16, has sand at 2,151-76 feet and is waiting for a standard rig. Six-inch casing was cemented at 2,035 feet at Southern's No. 1 Tooker, Section 3-17-16.

In the Smackover district, Ackerly Drilling Co.'s No. 1 Murphy, Section 1-17-16 is drilling at 1,610 feet. Crestline Oil Co.'s No. 1 Telford, Section 34-17-15 has been temporarily abandoned at 2,246 feet. Gladys Belle Oil Co. lost the hole at 2,410 feet at No. 5-A Cook, Section 16-16-15, and skidded the rig 50 feet west and is drilling at 300 feet in the new hole. Grimes and Jones' No. 1 Prothro, Section 3-18-15, is drilling in lime at 2,350 feet. Gulf's No. 22 T. C. Murphy, Section 9-16-15, has 1,000 feet of oil in the hole from sand at 2,374-86 feet and is waiting for a standard rig. T. C. Henderson's No. 3 Smith, Section 18-16-15, is drilling at 2,400 feet. The bottom of the hole at 2,388 feet was cemented at Humble's No. 5 Pate, Section 10-16-15. H. L. Hunt's No. 1 Hammond, Section 27-16-16, tested 700 feet of fluid, 70 per cent salt water at 2,684-87 feet and arrangements are being made to core at 2,688 feet. Imperial Oil & Gas Co.'s No. 1 Goodwin, Section 26-17-16, is being cored at 2,699 feet.

Lion Oil & Refining Co.'s No. 2 Hardy-Murphy, Section 9-16-15, is full of fluid, 80 per cent salt water from 2,409 feet and is to be put on the pump. Lion's No. 10 Graves, Section 3-16-15, is being bailed to test sand at 2,667-70 feet. Magnolia's No. 3 Childs, Section 8-16-16, is drilling at 250 feet. Magnolia's No. 2 Werner Co., Section 1-16-17, is waiting for a standard rig at 2,253 feet. Four and three-quarters inch casing was cemented at 2,685 feet at Ohio Oil Co.'s No. 11 Pate, Section 10-16-15. Six-inch casing was cemented at 2,652 feet at Peer Oil Corp.'s No. 7 Cook, Section 17-16-15. Six-inch casing was cemented at 2,698 feet at Simms Oil Co.'s No. 4 H. B. Murphy, Section 15-16-15. A derrick is being built for Simms' No. 1 H. O. Murphy, SW cor. Section 34-16-16. A derrick is being built for Southern Crude Oil Purchasing Co.'s No. 10 Graves, SE cor. W half Lot 5 NW, Section 3-16-15

Standard Oil Co.'s No. 4 Reynolds, Section 6-18-15, was bailed to 80 feet off bottom at 2,157 feet where only a slight showing was found. Sun Oil Co.'s deep test, No. 9 Brown, Section 8-18-15, is drilling in sandy lime at 3,535 feet. The Texas Co.'s No. 8 Hays, CNL, Lot 4 NE, Section 4-16-15 is a rig.

Ouachita County

On the Ouachita side of Smackover, Simms Oil Co.'s No. 6 Murphy, Section 29-15-15, was junked at 2,300 feet, the casing pulled and the test abandoned. In the Stephens district Louisiana Oil Refining Corp.'s No. 1 Culp, Section 22-15-19, was completed at 1,515 feet for a 20,000,000-foot gas well.

W. H. Copenhaven's No. 2 Berg, Section 13-15-17, is drilling at 1,700 feet. Gulf's No. A-20 Umsted, Section 33-15-15 is coring at 2,688 feet; A-21 is drilling at 1,895 feet. Humble Oil & Refining Co.'s No. 10 Hildebrandt, Section 28-15-15, is drilling at 2,505 feet. Surface casing was set at 41 feet at W. R. Keever's No. 2 Neely, Section 27-15-16. Six-inch casing was cemented at 2,270 feet at A. Meek's No. 2 Clawson, Section 35-15-17. Phillips Petroleum Co. has resumed drilling at No. 1 Tate, Section 9-14-17, at 2,111 feet with standard tools. J. D. Reynold's No. 1 Howell, Section 15-14-18, was dry at 1,864-84 feet and is shut down at 2,100 feet for boiler repairs. Six-inch was cemented at 1,461 feet at Reynold's No. 1 Ratch and Cartier, Section 2-14-18.

Standard Oil Co.'s No. B-8 Bennett, Section 32-15-15, is drilling in hard sand at 2,576 feet. Standard's No. 11-B Mur-

(Continued on Page 136)

4 SMALL WELLS AND 6 DRY HOLES MEXICO'S RECORD FOR A WEEK

By George Blardone
Staff Correspondent, Mexican Fields

TAMPICO, Mex., Aug. 20.—Only 10 wells were finished in Mexican fields the past week the tally showing four small producers and six dry holes. The best well of the week is Tampascos Oil Co.'s No. 20 Robles, in the old Panuco Field, which is in good for 1,500 bbls. at the shallow depth of 1,560 feet. Transcontinental Petroleum Co.'s No. 1 Robles is good for 500 bbls. at 1,525 feet and its No. 7-H Etienne is called 75 bbls. at 1,750 feet. The other producer was in the Corcovado sector, Mexican Gulf Oil Co.'s No. 31-A Chapacao there being good for 250 bbls. at 1,878 feet.

The failures in the northern fields follow: Mexican Sinclair Petroleum Corp.'s No. 95-A Lot 3 Cacalilao finished in salt water at 2,000 feet. Mexican Gulf Oil Co.'s No. 27 Lopez, Panuco, finished in water at 1,705 feet. Mexican Petroleum's No. 2 Silva, Ebano, is a dry hole at 2,290 feet, and its No. 102 Conteca is the same at 2,280 feet. National Lines' No. 50 Chapacao finished a duster at 2,502 feet.

In the south fields, Mexican Eagle Oil Co.'s No. 49, Lot 111 Amatlan, drilled into salt water at 1,917 feet.

July Completions

The month of July saw only 59 wells completed in Mexican fields, of which 23 belong in the production column, the remainder being failures. The new production promised by the completions looked imposing as the wells came in, being: 42,290 bbls. from 21 wells in the northern fields, and 30,200 bbls. from two south fields wells, a total of 72,490 bbls. the day flush. As before remarked, however, "flush" production is, in many instances a veritable will-o'-the wisp in these days of sudden salt water invasions.

Panuco-Cacalilao

In the Panuco-Cacalilao sectors of the northern fields drilling operations as the week ended are best reflected as follows: In the Cacalilao, La Corona Petroleum Co.'s No. 157, Lot 1, is in gray shale at 1,060 feet; its No. 158 has cemented 10-inch in the San Felipe at 1,200 feet, and in Lot 4 it has two locations rigged and one spudding. In the Panuco, La Corona's No. 82 San Manuel, in the heart of the old field, "the deep test" has been shut down for orders at 3,877 feet and it may be abandoned there. The company's other Panuco tests follow: No. 122 Delicias is in shale at 950 feet; No. 123 La Polla has cemented 8-inch in gray lime at 1,250 feet; No. 124 Ojital is in shells at 1,225 feet; No. 125 Salvasuchi has cemented 8-inch in gray lime at 1,290 feet and No. 8 Chijol is in gray shale at 1,110 feet. Cia. Pet. Capuchinas No. 11, Lot 12, W. Maguabes has shut down at 1,515 feet in gray lime; No. 4, same, is drilling in gray lime at 1,498 feet, making fluid and its No. 7-A is in shells at 1,150 feet. Cia. Pet. Francia Mexico's No. 9-A Piedras is in shale at 186 feet and its No. 6-A Lomas y Llanos is in a similar formation at 237 feet. International Petroleum Co.'s No. 277, Lot 5 Cacalilao has cemented 8-inch in shells

(Continued on Page 136)

Outstanding Performance Wherever Compressors are Used

THE remarkable performance of Bessemer Compressors can be traced to outstanding features of engineering and construction.

On the type ten units the power cylinders are of the Bessemer two cycle type, while on the type FC units the power cylinders are of the four cycle type. Both engines deliver a consistent power output up to and above their full rated horsepower without strain or laboring.

Adjustable crosshead construction is used throughout; all bearings and crosshead shoes have exceptionally large wearing surfaces and are easily accessible and adjustable. Simplicity and strength are features of construction in each type of power plant.

The compressor cylinders are of the new Bessemer type which have the highest volumetric efficiency of any compressor cylinder built. The compressor valves are of the best grade spring steel and will stand up under continuous impact and high speeds.

The outstanding performance of Bessemer Type Ten and Type FC Compressors is due to their advanced design and wonderful construction. Wherever a Bessemer Compressor is operating, it's setting a performance record.

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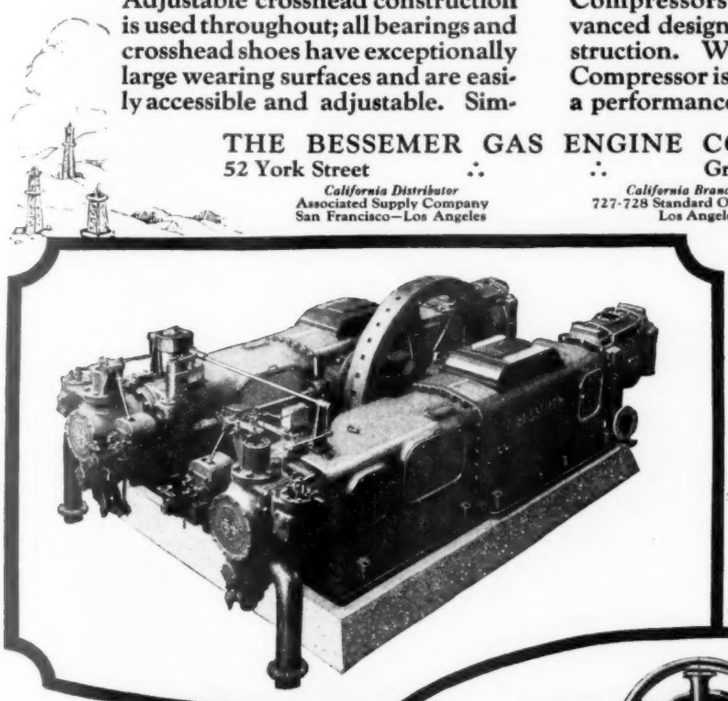
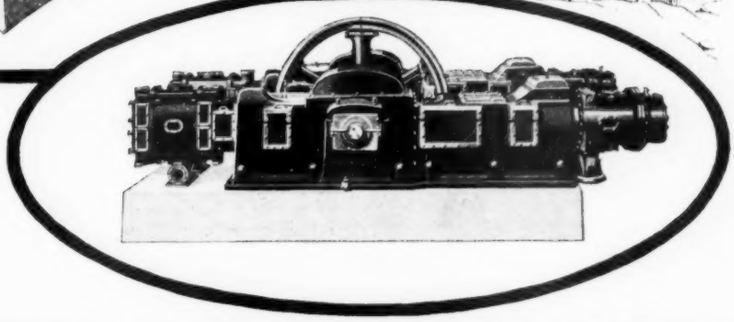


Bessemer Four Cycle Compressors have a remarkably simple valve assembly which assures high engine efficiency, low fuel consumption and trouble free service. They are ruggedly built to deliver years of uninterrupted service.



Bessemer Type Ten Two Cycle Compressors are the standard of the natural gasoline industry. Their running time is consistently 99% plus, and their maintenance almost nil.

BESSEMER COMPRESSORS

Spindletop Up With But One New Well

Yount-Lee Oil Co.'s 10,000-Bbl. Well Choked Down to 3,000 Bbls. Good Completions at Hull and Goose Creek

By P. L. McGreal
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Aug. 23.—The deep sand Spindletop section offers only one completion this week, a 5,000-bbl. well on the west side, but which extends the limits 350 feet to the south along the public highway. Operators there have agreed to hold up completions pending more lines and storage facilities.

Total completions in the Coastal division last week numbered 20, of which 5 were dry and 1 a salt water well. The new output aggregates 10,010 bbls. compared with 12,535 bbls. last week. Three wildcats were abandoned.

The estimated gross production of the pools for the week ending August 21, is 170,630 bbls., or only 350 bbls. more than for the previous week. The gross for the new sands in the Spindletop Pool is 79,400 bbls., an increase of 2,400 bbls. over last week. The Yount-Lee Oil Co.'s No. 8 McFaddin there, which came in late last week credited with 10,000 bbls. initial, is choked down to 3,000 bbls.

The gross for each pool is as follows:

District—	Gross Bbls.
Boling	2,700
Batson	1,350
Blue Ridge	1,250
Big Creek	1,800
Barber Hill	700
Dayton	80
Damon Mound	800
Edgerly, (La.)	875
Goose Creek	10,800
Humble	4,900
Hull	16,300
High Island	500
Jennings, (La.)	1,400
Lockport, (La.)	4,450
Markham	85
Nash	630
Orange	8,000
Orchard	175
Pierce Junction	3,970
Piedras Pintas	115
Spindletop	79,400
Saratoga	1,500
Sour Lake	7,470
South Liberty	4,800
Vinton, (La.)	6,900
West Columbia	9,500
Welsh-Anse La Bute, (La.)	80
Miscellaneous	100
Total	170,630

Southwest Fields

The estimated gross in the southwest fields for the week of August 21, is 45,885 bbls., a decrease of 355 bbls. compared with last week. The Luling Field decreased 650 bbls. and Lockhart (Lytton Springs) declined 500 bbls. The Mirando districts increased 500 bbls.

The daily average for each field is as follows:

Luling	21,950
*Mirando	16,800
Somerset	2,040
Calliham	105
Rockdale-Minerva	940
Lockhart	4,050
Total	45,885

*Includes Webb, Jim Hogg, and Zapata Counties and the Cin-Tex-Bruni district in Duval County. The Piedras Pintas Pool in Duval County is included in the Gulf Coast totals, being a saline dome proposition.

	Bbls.
Grand total for the week	216,515
Grand total for last week	216,520
Net decrease	5

Spindletop Pool

The completion in the Spindletop Pool is the Gulf Production Co.'s No. 1 Jack-Duff, which came in Thursday at noon flowing 5,000 bbls. at 3,330 feet. It is the last well on the right side of the highway going south and is about 350 feet from production. The Sun Oil Co. has a derrick up one location south and the Gulf Co. has another as an offset on the south. The Magnolia Petroleum Co. is clearing for a location about 500 feet farther south on its tank farm. The Gulf Co. abandoned No. 1 Jack-Duff around 3,000 feet and then came back and deepened it.

Paggi Brothers' No. 1 Gordon is drilling deeper at 3,123 feet. No. 2 is at 2,660 feet and No. 3 is around 1,760 feet. The Gulf Production Co.'s No. 2-A Weed will be drilled deeper. No. 4 Weed is at 3,345 feet and No. 5 at 2,655 feet. No. 2 Mann is deepening at 3,109 feet and No. 3 Mann is drilling around 3,190 feet, with No. 4, at 2,675 feet. On the Oakwood lease, the Gulf Co.'s No. 2 is below 2,700 feet; No. 3, at 1,876 feet and No. 4, around 850 feet. No. 2 Roche is deepening at 3,110 feet. No. 3 is around 3,250 feet, and No. 4 at 2,700 feet. The Sun Oil Co.'s No. 3 McLean is at 3,617 feet. No. 4 McLean is drilling around 2,670 feet. The Atlantic Oil Producing Co.'s No. 3 McLean is drilling below 2,980 feet. No. 4 is below 2,915 feet, No. 5 at 1,900 feet and No. 6 around 450 feet. Locations have been made for Nos. 7 and 8. On the Southern Pacific Railroad right of way, the Rio Bravo Oil Co., a subsidiary of the railroad company, is drilling No. 4 around 2,670 feet, and No. 6 at 980 feet, with No. 7 at 2,675 feet. A location has been made for No. 9. These are on the left of the highway going south.

The Deutser Oil Co.'s No. 1 Scharbauer is drilling deeper at 3,600 feet. Combest and others' No. 1 Ewing is around 3,455 feet. Turnbow Oil Co.'s No. 1 Banks is at 3,235 feet, and No. 1 Weed is at 2,835 feet. Porch and Telshaw's No. 1 Trembly is around 1,980 feet. The Unity Oil Co.'s No. 89 McFadden is around 2,560 feet. Wilson & Broach's No. 1 Weed is at 1,235 feet. The Lord-Mothner Oil Co.'s No. 1 Davis is drilling around 1,000 feet. The Grayburg Oil Co.'s No. 1 McLean is at 910 feet. The Walker Oil Syndicate's No. 1 Quinn is at 350 feet. The Deep Sand Oil Co.'s No. 1 Howell is at 1,360 feet.

The above list are all drilling on the west side of the dome. The Seven Oil Co.'s No. 2 Trembly and the New Beaumont Oil Co.'s No. 1 Garrick are both shut down temporarily at 1,500 and 2,650 feet respectively. They are north of production. W. B. Flynn has a location for No. 1 fee, north of production. In addition to the west side operations, the Yount-Lee Oil Co. is drilling No. 9 McFadden, No. 4 fee, No. 2 Davis, and No. 2 Trembly; also Nos. 7 and 8 Gladys on the southeast side of the dome. On the west side, locations have been made for the Spindletop Gusher Oil Co.'s No. 1 Rush, the Highland Oil Co.'s No. 1 McFaddin, Hines' No. 1 Ewing, Tanarasite Oil Co.'s No. 1 Weed and R. A. Moore's No. 1 Gordon.

This is a total of 41 wells drilling in the deep sand areas, two of which are shut down. Eight locations have been made and four are rigging to start drilling.

More Completions

The following table shows the results of the week's work in the pools:

Pool—	Comp.	Prod.	Dry	S.W.	Bldg.
Big Creek	1	1,200	0	0	0
Goose Creek	2	*1,500	1	0	1
Hull	4	775	0	0	2
High Island	1	500	0	0	0
Lockport	1	250	0	0	0
Markham	1	0	1	0	0
Orange	2	185	0	0	0
Pierce Jct.	2	2,550	0	0	0
Spindletop	1	5,000	0	0	0
Sour Lake	0	0	0	0	1
South Liberty	0	0	0	0	1
Vinton	2	50	0	1	0
Miscellaneous	3	0	3	0	0
Total for week	20	10,010	5	1	5
Total last week	23	12,535	1	3	6

*Sanded.

In Hull Pool

In the Hull Pool, The Texas Company's No. 1 Hannah is flowing 1,700 bbls. of fluid, 80 per cent water, at 2,975 feet. The Republic Production Co.-Houston Oil Co.'s joint No. 132 Dolbear is heading 300 bbls. at 2,500 feet, and No. 135 is bailing at 2,750 feet. The Humble Oil & Refining Co.'s No. 23 Guedry is pumping 75 bbls., 8 per cent water, at 3,100 feet. The Gulf Production Co.'s No. 10 Thomas will pump at 2,750 feet and its No. 70 Phoenix is bailing at 3,375 feet.

In the Goose Creek Pool, the Gulf Production Co.'s No. 12 Chapman-Bryan started flowing at the rate of 1,500 bbls. per day, but sanded. Crew is washing the hole. The same company is bailing No. 25 Smith at 2,750 feet. The M. & B. Oil Co. abandoned No. 4 Scorrgea, northwest of production, at 4,550 feet.

Two wells were completed in the Orange Pool. The Tillery Oil Co. revived No. 2 State land and it is flowing 150 bbls. by heads at 4,050 feet. The Gulf Production Co.'s No. 6 Peveto, a work over, is pumping 35 bbls. at 3,400 feet.

The Gulf Co.'s No. 2-A Smith, another work over, in the High Island Pool, is making 500 bbls. at 2,800 feet.

At Big Creek, the Gulf Production Co.'s No. 30 Davis came in flowing 1,200 bbls. at 2,850 feet.

The Houston-Gulf Gas Co. abandoned No. 1 Kountze, 2 miles west of the Markham Pool at 4,515 feet. The Rycade Petroleum Co.'s No. 2 Kountze, on the south side, is testing 35 feet of sand and shale at 3,535 feet.

The Humphrey Corp. is preparing to test No. 1 Oxford-Kelly, on the southwest side at Sour Lake in the deep sand area at 3,484 feet.

The Premium Oil Co.'s No. 1 Mitchell, on the north side of the South Liberty Pool, is bailing at 3,760 feet.

J. F. Bashara's No. 1 Bender, on the west side at Pierce Junction, which came in last week flowing 2,500 bbls. at 3,610 feet, with a heavy gas pressure, is now making 1,000 bbls. per day. It is 600 feet east of the Rio Bravo Oil Co.'s wells. That company worked over No. 2 P. F. Settegast into a 50-bbl. producer at 3,900 feet.

The Vinton Petroleum Co. got salt water in No. 17 Vincent in the Vinton Pool at 3,660 feet. Marris McLean's No. 11 Gray is pumping 75 bbls. of fluid, 25 per cent water, at 3,100 feet.

The Vacuum-Gulf Co.'s No. 11 Miller, in the Lockport Pool, is heading 250 bbls. at 3,750 feet.

Abandoned Wildcats

The Marland Oil Co. quit No. 1 Hartfield, near Needville, Fort Bend County, at 2,150 feet. The Sun Oil Co. junked and abandoned No. 3 Masterson in Liberty County at 2,550 feet. In Brazoria County, the Roxana Petroleum Corp. abandoned No. 2 Clements at 2,410 feet after bailing sulphur water and salt water.

The Buckner Break Oil Co. is testing a showing in No. 1 Newman, 10 miles southeast of Smithville, Bastrop County, at 900 feet. Screen is set in 35 feet of sand and shale.

Drilling in the Pools

The Pierce Junction Pool, 8 miles south of Houston, is booked for a little drilling boom on the northwest flank of the dome. The Rio Bravo Oil Co. got three nice wells on that side and last week J. F. Bashara's No. 1 Bender came in making 2,500 bbls. initial at 3,610 feet. There is a strong gas pressure but the temperature of the oil is high. The Rio Bravo Oil Co. is offsetting west with No. 3 P. F. Settegast, drilling around 3,515 feet. Locations have been made by the Gulf Production Co. for offsets on the north and south sides of the Bender tract. The Marland Oil Co. has a location north and The Texas Company northeast. The Bashara well is about 600 feet east of production. It is now flowing 1,200 bbls. The Gulf Production Co.'s No. 18

(Continued on Page 78)

NEW TESTS PLANNED PROBABLY WILL DEFINE MALJAMAR POOL

By Special Correspondent

ARTESIA, N. Mex., Aug. 20.—Two new locations will be made in the Maljamar area, during the coming week, one hole to be drilled by Henderson-Dexter-Blair, and the other by the Prairie Oil & Gas Co. With the Ohio Oil Co. spudding in two tests both in Township 17, Range 32, and the Maljamar starting operations on its No. 1 on the Grace Mitchell permit in Section 5-17-32, 10 tests will be drilling in eastern Eddy and western Lea Counties. The drilling of these tests will be of the greatest importance as five are located in the NE SW trend and a like number in a NW SE direction. Cross sections made from the logs of these wells will then, it is believed, clearly define the Maljamar Pool.

Another good showing of both oil and gas was picked up in the Skelly Oil Co.'s No. 1 on the Lynch permit in the NE of Section 22-17-31 during the week. Samples examined by several geologists showed this to be coming from lime and anhydrite, topped at 3,023 feet and extending to 3,058 feet. This is believed to be a stray pay as a correlation of the Wooley Jones and Maljamar logs show nothing but lime. The red sand in the Skelly, found from 2,767 to 2,798 feet, failed to carry the heavy gas of the Maljamar, but proved good for 15 bbls. of oil daily. The next showing is expected at around 3,225 feet, corresponding with the 3,600-foot sand of the Maljamar.

In the Maljamar the water is rapidly diminishing with the oil steadily increasing. One head made Wednesday morning gauged 87 bbls. and with the water completely bailed off the well should be good for 250 bbls.

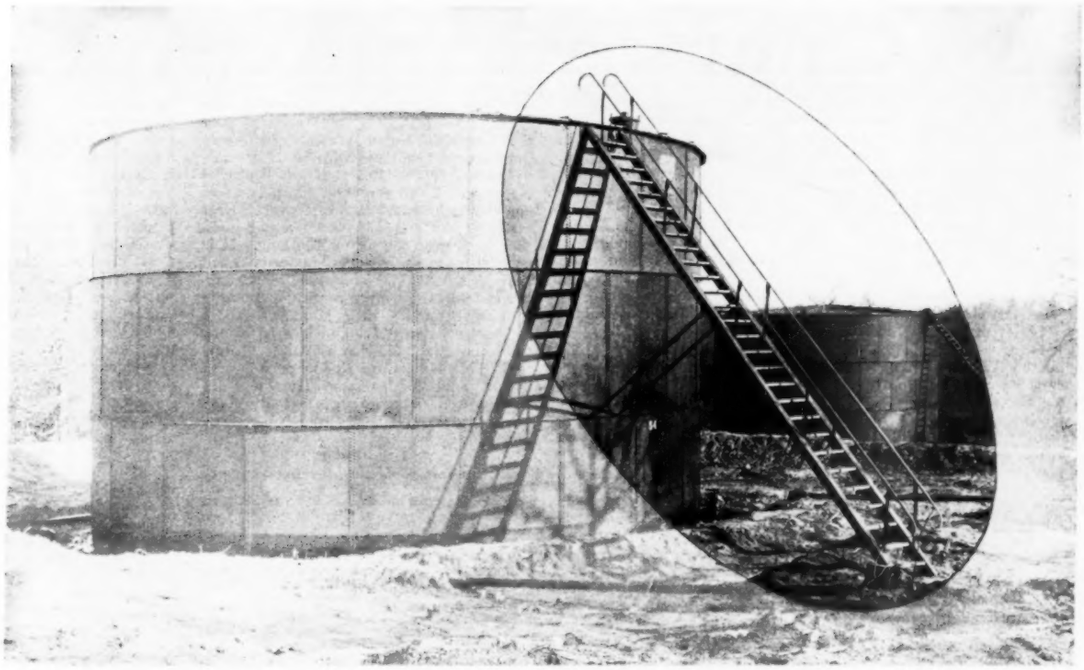
On the caprock, Inglefield and others' No. 1 in Section 4-17-34, is setting casing around 1,100 feet. The rotary rig that has been used on this hole will be moved in the next few days to the Caprock Oil & Gas Corp.'s No. 1 in Section 11-16-32.

Wooley-Jones' No. 1 on the Beeson permit, Section 33-17-30, is drilling below 3,100 feet and it is expected it will be carried down as a deep test. Drilling on Bruce Sullivan's No. 1 in Section 1-18-31 has been delayed for several days due to a fishing job at 1,170 feet.

A test that is attracting attention is the Sun Oil Co.'s No. 1, being drilled by Hugh Burch of Fort Worth, in Section 21-25-30. This hole is down 1,200 feet and considerable acreage is being bought in that vicinity.

In the Artesia Pool, Levers & Carper have completed a good well in their No. 3, in Section 3-18-28, which was drilled to a depth of 2,444 feet and shot. They

(Continued on Page 78)



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Lack of Water Slows Southwest Texas

Idle Crews Mark Most of the Pools. Carolina-Texas and Bruni Pools Exceptions. Deep Duster in Piedras Pintas

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Aug. 23.—Lack of water is still hindering the work in the Carolina-Texas Field in Webb County and in wildcat fields as well. Several rigs have been able to make considerable hole in the Carolina-Texas district, but most of the rigs are inactive. Wells are being drilled and lines laid but it promises to be some time yet before the water supply is ample. In the Bruni tract extension, drilling continues unabated, a supply of water being ample in that territory.

Rydal-Crown Central are drilling their No. 15 Bruni with a star rig on Block 17 of the Bruni tracts. Staley & Wynne have set casing and are ready to drill in their No. 16 Bruni in the W half of Block 18. They have spudded in No. 18, and have derricks up for Nos. 19 and 20 on the same block. Ruthada Oil Co.'s No. 5 Bruni is drilling at 1,500 feet in the east half of Block 18. Sun Oil Co. is drilling at 2,400 feet in its No. 5 Bruni on the north half of Block 44, where it failed to get production at the regular horizon at a little below 1,700 feet. Gibson Oil Corp. has its No. 10 "A", in the center of the south line of locations in its 60-acre lease in the west half of Block 13, down to the sand and should have it completed this week. It is the last of the outside locations to be drilled on the lease. Thrasher and others' No. 1 Bruni, on Survey 123, has erected a derrick. Harper and others are drilling at 600 feet in the No. 1 Bruni in Survey 835. Simms' No. 4 Bruni, in the south half of Survey 835, is shut down at 1,584-92 feet ready to test a sand.

Mirando Pools

In the older Mirando Field district, north of the Bruni tracts, Alonzo Oil Production Co., which has been doing no drilling for some months, is rigging up on Survey 605, 600 feet from the east line and 2,500 feet from the south line. Kirkpatrick & Lucas' No. 1 Puig is standing at 1,843 feet. The same operators have abandoned the location for their No. 2 Anderson a little farther north and a half-mile east of production, being near the No. 1, which got a showing of oil but failed to make a well at 1,803 feet. Jackson-Shankle's No. 2 Garcia has set casing at 1,568 feet in Block 22 of Survey 606. Crown Central's deep test, the No. 10 Garcia, on Survey 606, located in the shallow district, is drilling at 2,550 feet. No. 11 Garcia is on the shallow sand at 1,573 feet. R. F. Duggan's No. 1 Garcia, in Survey 592, located 300 feet from the south and 150 feet from the west line has spudded in.

Carolina-Texas Pool

Associated-Carson's No. D-3 Webster, in Survey 684, a south offset to the Associated-Carson discovery well is drilling at 1,875 feet (instead of 2,000 feet as previously reported). Associated-Carson's No. D-4, in the southwest corner of the same 20-acre lease is rigging up. It offsets the Murchison & Fain test, which is drilling at 2,000 feet. Associated Oil Co.'s No. B-1 has the derrick up. No. B-2 is drilling at 2,263 feet. It is off to the northwest in the direction of the gas center and with the Associated's No. F-2, a gas well, in between it and the discovery oil well. The Texas Company's No. 1 Webster has set casing at 2,580 feet. It is a north offset to the Associated-Carson discovery oil well. The Texas Company's No. 2 Webster is shut down for lack of water, and No. 3 is drilling at 1,042 feet. Magnolia Petroleum Co.'s No. 1 Webster is drilling at 1,350 feet. S. O. M. Oil Co.'s west offset to the Associated-Carson's No. D-3, is drilling at 1,000 feet. Morgan Brothers-Killam's No. 1 Webster is standing at 300 feet waiting for water. Morgan Brothers-Poor Boy's No. 1 Webster is waiting for water at 1,100 feet. Morgan Brothers' No. 1 Benavides is waiting for water to spud in. Houston Oil Co.'s No. 1 Barnsley is drilling at 1,700 feet in Block 15 of Survey 268. Moody Oil Corp., in Survey 688, is rigged up and waiting for water. Hazlitt-Simmons' No. 1 Barnsley, in Block 9 of Survey 268, is in sandy shale at 1,968 feet. United States Gas & Oil Co.'s No. 1 Benavides is standing at 2,140 feet waiting for water. Winch-Killam's No. 2 de la Garza, in the center of Survey 336, is coring at 2,608 feet. Brashara-Neal have made a location in Block 8 of Survey 689.

Mirando Valley Pool

O. W. Killam's No. 2 Hinnant, at 2,630 feet, is dry and is being abandoned. It is in the north edge of the old Mirando Valley Pool where production is had at 1,450 feet.

Piedras Pintas

In the Piedras Pintas Field at Noleda in Duval County Humble Oil & Refining Co.'s No. 6 Walsh was put on the pump last Wednesday. It is the second producer completed in the field, the first being the Humble's No. 4 Walsh, which was the discovery well and which was brought in December 20, 1925. Total depth of No. 4 was 3,623 feet and total depth of No. 6 which is 364 feet to the northwest is 3,594 feet. Oil has been standing in the No. 6 near the top of the hole. It is possible that after being pumped it will begin flowing. The No. 4 has been pumping and flowing nearly continuously since it was bzrought in. Humble's No. 1 Becher in Survey 531 and located a mile to the west is drilling at 1,599 feet. Magnolia Petroleum Co.'s No. 1 Speer located a half mile northwest of Humble's discovery well, has reached a total depth of 4,010 feet and is dry and being abandoned.

Cole Field

In the Cole Field Barkley-Meadows and Morgan's No. 1 King-Harper in Survey 323, located 1½ miles north of the Cin-Tex discovery well, has been placed on the pump and is making about 150 bbls. a day with a little salt water. The well was plugged back from 1,766 feet after going into salt water. It has about 12 feet of oil sand and possibly did not plug back far enough. Derrick is up for No. 2 which is 300 feet northwest and Gulf Production Co. is rigging up on a southwest offset and these will seek to keep from drilling too deep and getting into salt water. General opinion seems to be that the pool discovered early this year and which for a time seemed very limited may widen out to the north and make a pool of importance. On the Gulf well and the Barkley-Meadows and Morgan No. 2 will depend much of the information on what the pool will do. O. W. Killam's No. 4 Lopez in Block 8 of Survey 319 off to the west from the Barkley Meadows and Morgan well has set casing at 1,726 feet and is shut down. Killam has completed three big wells in that district. Cole Petroleum Co.'s No. 25 Benavides is drilling at 3,170 feet. It is located in Block 1, Survey 18, and is a mile to the southeast of the Cin-Tex discovery well and has set 8¼-inch casing at 2,946 feet.

Randado Pool

Grayburg Oil Co., which got a 150-bbl. well in its No. 3 Weil in Block 15 of Survey 81 in the Randado Field at 1,302 feet is drilling a little deeper. Grayburg's No. 4 Weil has set casing at 1,298 feet and is ready to test. Grayburg's No. 5 Weil is drilling at 1,000 feet. All are on Block 15 of Survey 81. Johnson and others' No. 8 Palacious is testing at 1,254 feet on Block 19 of Survey 291. No. 9 in the same block is rigging up and No. 10 has made location 150 feet from the south line and 450 feet from the west line of Block 10, Survey 291. Houston Gulf Gas Co. is drilling at 900 feet in No. 12 Palacious in Block 11 of Survey 291 and rigging up on No. 13 in Block 20 of Survey 291 and located 476 feet from the east line and 543 feet from the north line of the block. This test will pass up the shallow production and make a deep test. Brashara & Maddox are rigging up in their No. 1 Weil in Block 8 of Survey 81 and Shankle & Corry have spudded in on their No. 1 Weil in Block 9 of Survey 81. Andrews Petroleum Co. is drilling at 80 feet in its No. 1 Palacious. Magnolia's No. 9 Palacious has set casing at 1,276 feet in Block 6 of Survey 291, located 450 feet from the south and 150 feet from the west lines.

Kitselman & St. Albans

Associated Oil Co., which has completed its Nos. 2 and 3 Lopez wells as gas wells and its No. 4 as an oil well, is now drilling the No. 1 Lopez on Block 20 of Share No. 1 of the Kitselman & St. Albans Pool, the location being 600 feet from the south line and 414 feet from the west line. Kitselman & St. Albans have abandoned at 2,160 feet the No. 4 Holbein on a Texas Pacific Coal & Oil Co. lease, and are drilling at 2,929 feet in the No. 40 Holbein in Block 30 of Survey 12. It has casing set at 2,143 feet in the No. 44 Holbein and is waiting to drill in, and is moving in rig to the No. 45 Holbein in Block 9 of Survey 15, located 150 feet from the south line and 200 feet from the east line, and is moving in also in No. 46 Holbein in Block 13 of Survey 45, 150 feet from the east line and 210 feet from the south line.

Completions in Mirando

Sixteen wells were completed in proven territory in the Mirando Field of the Laredo district during the past week.

(Continued on Page 82)

WILDCAT OPERATIONS IN MANY COUNTIES; IMPORTANT SHOWINGS

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Aug. 23.—L. M. Holden's No. 2 Jones, located 7 miles east of Hebbronville in Jim Hogg County, which last week was in a gas sand at 3,135 feet and looking like it had oil possibilities, is this week ordering out casing to set and make a test. The well was deepened a little from 3,135 in the expectation that the sand which looked like a gas sand would begin showing oil. The hole is now a little more than 3,135 feet deep and showed more gas sand. Rather than run the risk of going into salt water it has been decided to set and test and attempt to bring in a gas well. Casing was ordered to go out last week Wednesday and should be in the hole and set so that a test can be made probably by the last of this week. The well, in addition to having a core that looks like a gas sand, has been showing considerable gas ever since it went into the gas sand. It has 6⅝-inch casing set at approximately 1,600 feet and the new string of casing will be 5⅜-inch.

Atascosa County

W. G. Franch has moved in a boiler, the last of the rig for the No. 1 Frank Jaksik, in northeastern Atascosa County, and will be ready to spud in soon.

Bexar County

Marland Oil Co., drilling with a diamond core drill, has started its test south of St. Hedwig, in eastern Bexar County. It is understood it will core down to the Edwards lime. The test from a scientific standpoint may be very profitable and lead to the discovery why the Edwards does not produce in places where it looks as though it should. I. L. Dingman has spudded in a test south of the Marland's test and located on the Joseph Przybyszerwski farm in the Springer Survey. It is to drill to the Austin chalk and may go below that.

Bastrop County

Neal A. Nelson, of Ponca City, Okla., No. 1 Arthur Naumann in Bastrop County, 5 miles south of Smithville, is hauling out casing for a test. Mahone and others are getting ready to drill again in northern Bastrop county near Elgin.

Bee County

W. G. Clark has abandoned his test on the Scott farm north of Beeville and is moving the rig to the western part of the county, where he will start another wildcat test.

Caldwell County

Fred Adams has made a location and is moving in to drill a wildcat test in Caldwell County, several miles southeast of Lockhart and near the North & South's Callihan well, which has been producing a small amount of oil from the Austin chalk. Adams' test will be on the Kelley farm. Reiter-Foster Oil Corp. has erected the derrick for its No. 1 Riddle, which is a new test in the territory south of Dale, where Reiter-Foster and others have been testing a structure.

Duval County

Humble Oil & Refining Co.'s No. 10 Singer, in Duval County, is rigging up 1,500 feet from the north line and 300 feet from the east line of Survey No. 4 and on the Palangano salt dome, where Humble and others have been wildcatting for years. No. 9 has been abandoned. At a few hundred feet it went into anhydrite. Humble's No. 5 Schallert in Survey 255 and in the same territory is drilling at 2,181 feet and has a showing of oil. It is the third showing, the others having been encountered at 1,433 to 1436 and at 1,794 feet. Simms Oil Co.'s No. 1 Schallert, in the same vicinity, and also on the Palangano salt dome, reached a total depth of 3,758 feet and is now sidetracking some drill stem lost in the hole.

Humble Oil & Refining Co. is moving in tools on its No. 1 Kohler in Survey 406 and the No. 2 Kohler in Survey 168, in Duval County, in the 24,000-acre block of leases in which Reiter-Foster owns a one-fourth interest. Maddox & Goodman have made a location for their No. 1 Carlyle, in southeastern Duval County, at Copita. George M. Ball is reaming at 2,600 feet in his No. 1 Roach, 3 miles east of the Cole Field in Duval County. Simms Oil Co.'s No. 2 Dinn, a little east of their gas well in the territory 5 miles north of the Cole Field, is drilling at 2,624 feet. Humble Oil & Refining Co.'s No. 1 Dowby (fee) tested salt water at 2,355 feet and is now drilling at 2,546 feet. Houston Oil Co. (J. T. Graham) No. 1 Beall, in the northeastern part of Duval County, steel tape measure, is 2,452 feet. It had a sand from 2,431

(Continued on Page 130)

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Huntington Beach Scene of Activity

Southwest Extension Development Portends Increase in Production Within Comparatively Near Future

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Aug. 21.—If operators in the southwest extension of the Huntington Beach Field maintain the pace set during the past three weeks, production figures should begin to reflect this work before the close of August and, if the Superior sand proves as productive as anticipated, another 30 days should find the production curve rising again. The amount of work accomplished in the town lot area since the completion of the Superior's No. 1 Jones is little short of remarkable, for during this period 46 rigs have been erected, some 15 or 20 of which have already been spudded in. A trip to the field yesterday revealed the existence of six new flags which will undoubtedly be supplanted by derricks within the course of the next week or ten days. In addition to these locations, concrete was being poured for five derrick formations.

One of the most interesting developments up to the present time is the attitude of the various pipeline companies which, anticipating commercial production in the extension, have not lost any time in piping the field. The Standard, Union, Southern California Gas Co., and the California Petroleum have taken the initiative in laying oil and gas lines but other companies will follow their lead within a short time, as several additional concerns have already secured blanket permits or indicated their intention of doing so. The California Petroleum has not yet finished its various gathering lines throughout the extension, but, with the ditches already dug and several welding crews at work, these lines should be ready for operation within the next week or ten days if necessary. This is of particular importance as the California Petroleum is stepping out into the fuel oil business and, with increased refinery consumption resulting from its rapidly increasing gasoline sales, may decide to make a bid for crude oil in the open market. This company has been marking time for several months but is now enlarging its distributing facilities at a rapid rate.

Companies Active

The Standard has practically suspended work on its Lease B, just north of the extension and has transferred its activities to the latter area where this company has a tentative drilling program covering something like 25 wells. The Standard has one battery of eight boilers in the southern part of Lease B and is bricking up eight more nearby to take care of its projected drilling operations in the town lot area. The company is running steam lines from these units to 11 wells in the recently opened section, most of which should be on the way down to the pay within the next two weeks. Only two of these drillers, Nos. 1 and 2, on the Huntington property, have been spudded in up to the present time but the rigs and foundations for Nos. 3, 4, 5, 6, 7, 8 and 9 indicate additional work immediately.

The California Petroleum is scheduled to spud in 5 wells within the next two or three days and it is the intention of this company to drill ahead as quickly as possible in order to participate in whatever flush production may be available. Individually the new wells are No. 1 McIntyre, No. 1 Tubach, No. 1 Turner, No. 1 Sandberg and No. 2 Plavan. The Superior, which concern finished the first well in the extension, is also hitting on all 12 and, in addition to No. 1 Jones, which has just been cleaned out and returned to production, and No. 1 fee, which is drilling ahead at 716 feet, is rigging up No. 1 Babbitt, No. 2 fee, No. 1 Cheadnow, No. 1 Gilmore, No. 1 Nixon and No. 1 Schwartz.

Doheny Enters Field

E. L. Doheny has entered this new area through the Petroleum Securities and, in view of this company's remarkable work at Torrance and Inglewood, will probably be among the first to participate in future production in the extension. This company is putting the finishing touches on the rigs for No. 1 Gross, in Block 319 and No. 1 Montgomery and No. 1 Tubach in Block 321. The Julian Petroleum, in addition to building rigs for the two new wells, No. 1 Johnson and No. 1 Stine, is getting ready to drill No. 1 Lambert, which, judging by the production of the Superior's No. 1 Jones a short distance away, should be good for something like 250 bbls. a day. The Miley Petroleum is also making preparations to finish a new well in the extension, No. 1 Pacific Electric, which should come into production about the same time as the Julian Petroleum's No. 1 Lambert.

George F. Getty spudded in his first well in this area, No. 4 Coffin, during the early part of the week and is erecting additional rigs for Nos. 5 and 6 on the same property. The McKeon Oil Co. has made excellent footage since spudding in and its initial test is scheduled to be cemented within the next day or two around 3,100 feet. The Wilshire's No. 1 Townsite, which passed up the Superior sand in search of a lower horizon, has just passed the 3,599-foot level. It is unknown whether the Wilshire intends to finish its second well, which is drilling in the extension in the upper zone, or follow the policy adopted in the initial test and take a chance on developing a lower sand. Five tests are scheduled to be spudded in within the next few days, included in which are the Ambassador's No. 1 Extension, the Black Diamond's No. 1 Extension, No. 1 Stine of the United States Royalties, the Paragon Oil Co.'s No. 1 Townsite and Wilhoyte & McCoy's No. 1 Extension. W. H. Anthony has just secured a lease in Block 222 and rig timbers should be on the ground within the next few days.

One Completion

There was one completion listed at Huntington Beach during the past week, the Standard finishing its No. 25 on the Bolsa Chica lease in the older section of the field. This well, which was drilled to 4,630 feet and finished with a 6¼-inch oil string, is flowing through a one-half-inch bean under a pressure of 910 pounds. The initial output was 631 bbls. of 28.2 gravity oil which cut 3 per cent. The Standard's deep test on this lease, No. 23, will probably be given a production test during the week from 6,137 feet and, while a water shutoff has apparently been effected, it remains to be seen whether the well will make a commercial producer. The Sun Oil Co. recompleted its No. 7 Wilson, which made a very promising preliminary flow a few weeks ago from 3,270 feet, but the present output, 267 bbls. of 18.1 gravity oil, is showing a rather high water content, averaging about 20 per cent.

The California Petroleum, following its success in completing No. 1 Buck, approximately a mile beyond production in the northern part of the field, has mapped a location for its second test in this area one location north of its initial completion. A tentative location has also been made for No. 3 just west of the discovery well but no definite steps have yet been taken toward driving the stakes. The Standard has spotted prospective offset locations on the Bolsa Chica lease adjoining the Buck ranch but this work will probably go along rather slowly due to heavy drilling requirements in the southwest extension. Before closing this summary of operations at Huntington Beach, it might not be amiss to revert back to the southwest extension in order to call attention to the possibility of opening up additional town lot acreage, which, at the present time is restricted as far as drilling is concerned.

Southwest Extension

Several well-informed operators are inclined to believe that the productive limits of the southwest extension will extend beyond the town lot area opened up for work several months ago, and as a result, definite steps have been taken toward anticipating this condition. The Huntington Beach Realty Board recently appointed a zoning committee to consider the advisability of establishing a new business section and recommending the removal of homes from that area adjacent to the section now being drilled up. If commercial production underlies the present business section, and this seems likely, it is quite probable that some of this acreage will be made available for work by the removal of existing structures, some of which could be moved at a relatively small cost. It remains to be seen, however, whether it will prove feasible to demolish the several brick and concrete structures located in the center of the city, as it is doubtful whether a sufficient cash bonus could be secured to cover the cost of removing these structures. It has been suggested that the realty board designate the east side of Huntington Beach as a zoned residential district and recommend locating the business section adjacent thereto. Any move along this line is dependent of course upon whether the productive limits of the field extend beyond the present unrestricted town lot section and into that which is still restricted.

Long Beach

Development work in the Long Beach Field resulted in the finishing of five wells during the past seven-day period, the largest of which was the Ibbetson Oil Co.'s No. 5 Cerritos in the northwest extension, a recompletion after being redrilled and deepened from the upper to

(Continued on Page 138)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

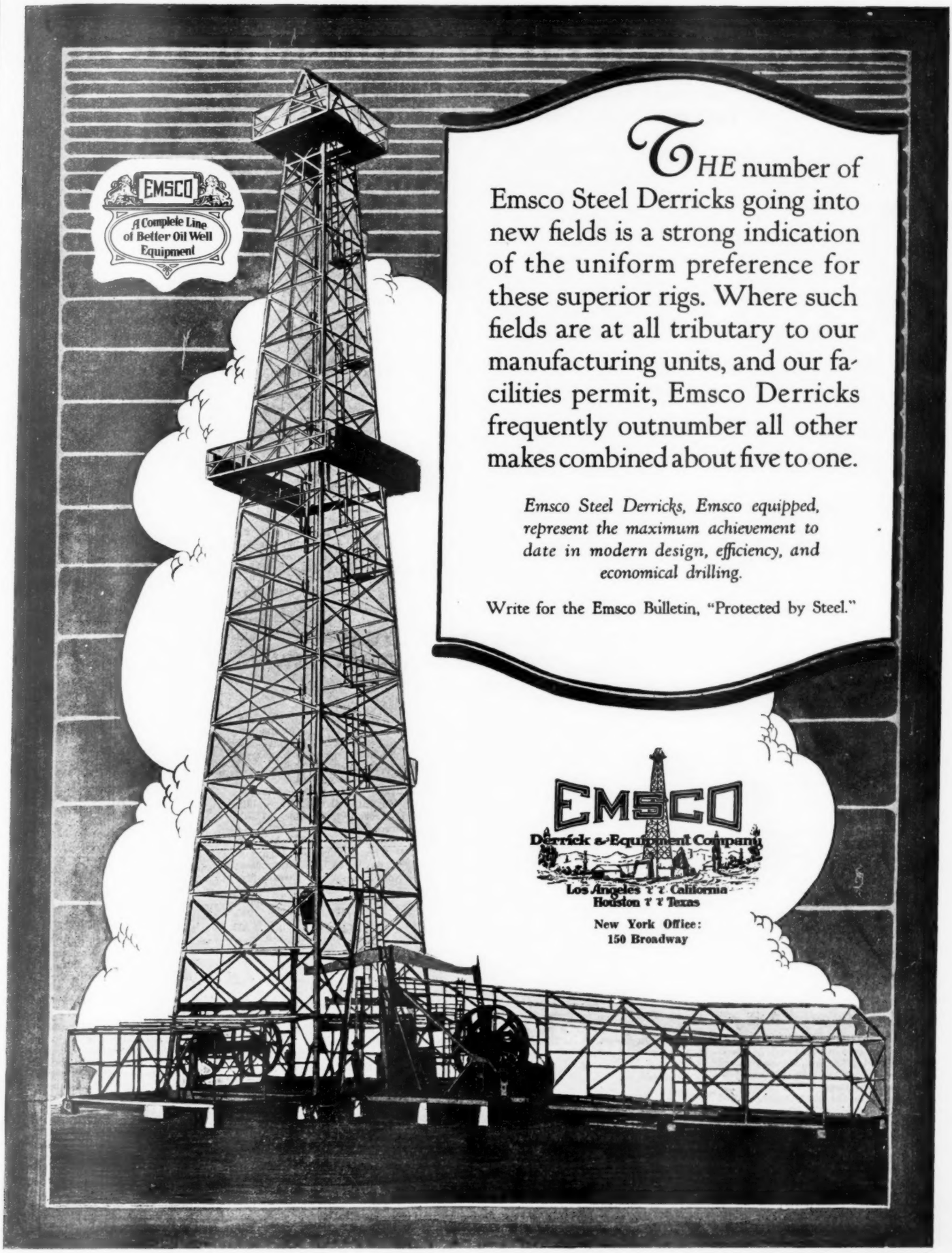
Company, Well, Location—	S-T-R	Depth	Status
Union, No. 1 Bryant, Seal Beach	2- 5-12	5,048	br. sh. drilling
Bellflower, No. 1 Blythe, Bellflower	.....	rig	spud soon
Marine, No. 1 Strong, Bellflower	24- 3-12	3,097	bl. sh. drilling
Feather & Preston, No. 1 Blinn, Clearwater	16- 3-12	3,000	gr. sd. drilling
Union, No. 1 Howland, El Segundo	24- 2-15	4,574	sd. sh. drilling
Smith Brothers, No. 1 Johnson, Hawthorne	17- 3-14	1,350	little gas drlg.
Associated, No. 1 Cypress, Inglewood	34- 2-14	2,520	sh. gr. sd. cm.
Johnson, G. W., No. 1 Martin, Manhattan	30- 3-14	5,315	unfavorable
Julian, No. 1 Trust, Manhattan	19- 3-14	5,440	sd. sh. drilling
Milham Exploration, Well No. 2, Del Rey	34- 2-15	5,974	br. sh. drilling
Barnsdall, No. 1 Merlo, Puente	35- 1-11	4,182	congim. drlg.
Petroleum Sec., No. 1 Sesnon, San Fernando	14- 2-16	3,344	sd. sh. fishing
Standard, No. 1 University, San Fernando	15- 2-15	3,640	sd. sh. drilling
Standard, No. 1 Austin, Topango	11- 1-17	1,033	hd. sd. drilling
Union, No. 1 Saugus, Saugus	15- 4-16	3,760	shells drilling
Union, No. 1 Olinda, Orange County	15- 3- 9	5,309	abandoning
Union, No. 2 Olinda, Orange County	10- 3- 9	4,650	gr. sd. drilling
Halfhill Packing Co., No. 2 Jeffries, Burbank	2- 1-15	730	hd. sd. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Marland, No. 1 Williams, Santa Barbara	32- 9-32	4,286	prod. test
Marland, No. 1 Lazard, Kern County	27-26-20	5,480	unfavorable
Union, No. 2 Theta, Kern County	23-28-20	50	survey hole
Schwartz, A. G., Well No. 1, Rosedale	25-29-26	4,710	hd. sh. drilling
Taylor, W. W., Well No. 1, Clovis	5-13-22	990	hd. sd. drilling
Associated, Well No. 1, Huron	20-19-17	2,503	sur. hole. abd.
Associated, Well No. 2, Huron	20-19-17	.....	rig, sur. hole
Fresno United, Well No. 3, Raisin City	23-15-18	3,490	suspended
Federal Explts., No. 1 Wildcat, Tulare County	15-22-24	1,668	sd. sh. drilling
Bolsa Chica, Well No. 1, Kettleman	30-23-19	2,209	sd. bl. sh. drlg
Marland, No. 1 Elliott, Kettleman	12-22-17	5,570	fishing
South Coalinga, Well No. 1, Kettleman	35-24-19	1,260	bl. sh. drilling
Shell, No. 1 Berlywood Moorpark	32- 3-20	4,765	unfavorable
C. C. M. O., No. 1 Hobson, Ventura County	22- 3-24	5,530	sd. sh. drilling
Milham Explts., No. 1 Sexton, Ventura County	19- 3-22	6,001	hd. sd. drilling
Standard, No. 1 Palmer, Santa Barbara	13- 9-23	2,320	sd. sh. drilling
Standard, No. 1 Camarillo, Ventura County	.....	1,850	congim. drlg.
Standard, No. 1 McGrath, Ventura County	18- 2-22	.....	rig, sur. hole
Pan American, No. 1 White, Monterey County	27-23-13	2,150	sd. sh. drilling
Pyramid, No. 1 Trescony, Monterey County	26-21- 9	2,605	sd. bl. sh. drlg.
Shell, No. 1 Murphy, Petaluma	29- 5- 6	2,200	hd. sd. drilling
Miley Explts., No. 2 Casitas, Ventura County	7- 3-25	401	sd. drilling
Rio Grande, No. 1 Canet, Ventura County	9- 3-23	958	hd. sd. drilling
Sentinel, No. 1 Tejon, Ventura County	5- 5-17	562	sd. drilling

TANKER SHIPMENTS FROM LOS ANGELES AND GULF COAST PORTS

Commodity—	Total This week	Daily Average	Total Last week	Daily Average	This year To date	Same time Last year
Crude oil	77,163	11,023	260,302	37,186	7,878,228	9,864,840
Fuel and gas oil	235,376	33,625	217,594	31,085	6,095,609	237,873
Gasoline	236,042	33,720	75,893	10,842	4,614,679	5,308,993
Tops	.....	.....	.....	.....	74,619	402,994
Coastwise—						
Crude oil	344,480	49,211	495,841	70,834	14,860,230	20,410,241
Fuel and gas oil	241,189	34,456	509,006	72,715	6,907,795	7,388,715
Gasoline	106,179	15,169	53,777	7,682	4,615,371	2,990,414
Kerosene	3,794	542	.....	.....	170,664	244,136
Tops	.....	.....	15,180	2,169	574,844	128,986
Exports—						
Crude oil	62,999	9,000	161,761	21,680	3,596,960	1,565,128
Fuel and gas oil	287,694	41,099	297,175	42,454	11,032,766	9,810,753
Gasoline	99,544	14,221	138,829	19,833	3,343,656	2,568,031
Tops	.....	.....	.....	.....	.....	170,407
Kerosene	98,460	14,066	57,278	8,182	1,438,586	1,597,190
TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS						
Fuel and gas oil	.....	.....	73,184	10,455	884,982	218,414
Gasoline	.....	.....	.....	.....	685,236	943,485
Tops	.....	.....	.....	.....	229,775	794,918
Lubricants	.....	.....	.....	.....	275,617	235,533
Coastwise—						
Fuel and gas oil	.....	.....	.....	.....	2,821,109	2,273,166
Gasoline	184,925	26,416	184,005	26,286	3,032,790	1,611,063
Kerosene	3,915	559	.....	.....	270,959	128,104
Exports—						
Fuel and gas oil	.....	.....	140,875	20,125	2,076,492	1,503,316
Gasoline	33,059	4,723	.....	.....	976,806	417,581
Kerosene	.....	.....	.....	.....	1,252,123	723,316
Lubricants	.....	.....	.....	.....	.....	243,429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4,000 Bbl. Well in Sunburst Field

Homestake Exploration Co. Gets Biggest Initial Producer Yet Found in that Field. Gas Pressure Off in Salt Creek

By F. B. Taylor
Staff Correspondent, Rocky Mountain Area

CASPER, Wyo., Aug. 21.—The feature completion of the week in the Rocky Mountain fields was a 4,000-bbl. well in Sunburst Field, Toole County, Montana, the largest well yet developed in the Sunburst district.

The Homestake Exploration Co. (Texas Pacific Coal & Oil Co.) drilling on Section 36-35-2, in the southwest extension of the Sunburst Field hit the Ellis sand with a 6-inch hole at 1,400 feet and the well blew the tools out of the hole and through the rig, then it went wild and is flowing oil over the landscape.

An Engineering Problem

The big lake created in the north end of the Salt Creek Field in Wyoming by the Midwest Refining Co. when that firm built a new electric plant, is presenting a problem in engineering that is a knotty one to the best heads of this part of the country. The lake has filled up with sediment to such an extent that its use as a reservoir for the electric plant is voided.

This lake was formed by building a dam across Salt Creek where that stream passes out through the escarpments of the field at the north end, Salt Creek flows north through the field and then northwest to join the Powder River west of Sussex.

During the past spring and summer, the Salt Creek district, has experienced more rains than any previous season on record, the heavy precipitation has equaled the rainfall usually met with in the tropics and the soft soil and gumbo of the Salt Creek Field were cut down and carried by the high waters to the big dam where they settled to the bottom and have practically filled up the whole dam area in one season.

The Midwest Refining Co. would like to know some plan by which this silt can be removed from the dam. It would be an easy matter to cut through the dam at any point and let the water cut a channel, but this would mean that the sediment would be eroded only in the channel of the creek bed, while high banks of the sediment would remain on each side and over the dam area. To take this sediment out by drag line or other mechanical methods would be too expensive to be considered.

Many propositions have been put forth to get this silt out, but so far no practical method of low cost has been found. About the most feasible so far is the placing of pumping units and hydraulicking the sediment out, but this is also considered to be quite expensive.

The Midwest Refining Co. is now placing a large cooling tower and condensing system to supply the electric plant at Salt Creek with water for the boilers.

Gas Pressure Decreasing

The gas pressure in Salt Creek has been steadily dropping for the past eight years and the operators are now beginning to realize the advantages they had in the early days when the gas pressure flowed the wells. The Midwest Refining Co. is examining the feasibility of returning the waste to the sands, after it has been passed through the compressor system at the gas plant and the gasoline extracted.

This matter requires considerable thought, as were the Midwest Refining Co. to devise a plan to return the gas to the sands, it would be a direct benefit to other operators in the field and at the expense of the Midwest Refining Co. The return of waste gas to the sands is not a new idea, for this has been in practice in the eastern fields for many years, and is now in use, more or less, in Mid-Continent and other fields.

Since the starting of the electrical plant in the Salt Creek Field, the use of this power as a medium for operating oil fields has been watched with great interest. It is said by some of the most conservative operators of this region that the electrical plant of the Midwest Refining Co. at Salt Creek provides a better and more economical method of operation than any other means yet devised. In the matter of drilling wells alone, this saving is enormous; it is considered that the Midwest Refining Co. is saving $2,000 in fuel alone on every well drilled with electric power.

At present, the Salt Creek Field has 1,306 wells producing and the Midwest Refining Co. has 1,910 of these. There are 52 wells drilling at present. The Midwest Refining Co. is now operating all its wells from the electric plant, both drilling and producing. Even the cleaning out work is done by electricity.

Progress of Utah Tests

In the Utah operation at Cane Creek, on the Colorado River, the reports are routine. The discovery well is now at 3,500 feet and drilling in a brown, sandy shale. The test on the Shaeffer Dome, 5 miles south is at 1,792 feet and mudding the 10-inch pipe. The Lockhart Canyon wildcat near Moab, by the Utah Southern Oil Co. is rigging up and the Cedar Mesa wildcat of the same firm together with the General Petroleum and the Utah Oil & Refining Co. is about ready to spud in.

Snowden & McSweeney have contracted with the Midwest Refining Co. to develop a permit the Snowden & McSweeney firm bought near the Cane Creek well. The well will be considered as a joint test although it is located on the Snowden & McSweeney land. The Midwest Production Co. will drill the well on a cost plus basis for Snowden & McSweeney.

Flurry of Excitement

In southern Wyoming, a small flurry of excitement was caused by the Carter Oil Co. finding a gas pocket at 1,600 feet in the Horse Creek wildcat drilling about 30 miles north of Cheyenne. This well is in the Tertiary formations and will be in the Tertiary until a depth of about 3,200 feet is reached. The Tertiary is likely to have gas pockets or even shows of oil at any point.

Return to LaBarge

Over in the LaBarge Field, the Midwest Refining Co. and the Utah Oil & Refining Co. have decided to enter that operation after having abandoned the field as worthless. This field is located in the southwest corner of Wyoming at a high elevation and the surfacing is considered Wasatch, which is a stratum in the upper part of the Tertiary. The wells find their production in a sand lens in this formation, from 500 to 1,500 feet deep. The oil is a very high grade crude and the Beneficial Oil Co. has been transporting the ore by truck to the railroad for over 10 months with a total production of 40,000 bbls.

Sulphur Water in Tensleep

The deep test being drilled by the Producers & Refiners Corp. in the Hudson black oil field in Fremont County, reached the Tensleep sand and found a heavy flow of hot sulphur water at 2,146 feet. This well found a good production of black oil in the Embar sand, however, and will be produced from that sand.

Gas From Chinook Field

Chinook, the county seat of Blaine County, in northern Montana is expecting to have gas in the city by September. This gas is to come from the Bowes structure, lying about 10 miles south of Chinook. A large sugar refinery there has already commenced to take out the automatic coal burners preparatory to installing gas under the boilers.

The Hard Rock Oil Co. started the ditching for the new pipeline that will carry the gas from the Bowes structure to Chinook and this company recently took over the Hammond interests in the two gas wells now shut in on the Bowes structure. Two more wells are to be put down at once by the Hard Rock Oil Co.

The line will be a 4-inch pipe and the pipe is to come from Winnett where it is being loaded at present. Some doubt is expressed as to the Bowes structure wells being able to hold up in the gas production if a steady drain is made. However the promoters of the new line appear confident that the wells will supply all the gas necessary for the project.

Arro Branching Out

The Arro Oil & Refining Co. held its annual meeting at Lewiston, Mont., the past week and the company authorized a plan to market its refined products that will involve the building of from 15 to 20 new filling stations in Montana the coming year.

This company has a refinery at Lewistown and one just over the Canadian boundary at Coutts, Canada. The Lewistown plant takes its oil from the Cat Creek and the Coutts refinery from the Sunburst Field. Through a lucrative marketing plant, the Arro Oil & Refining Co. does not have any trouble with its residual oils as the firm has an established market for all fuel stocks in the Lake Superior region, particularly in the cities of Duluth, Superior and Minneapolis. The firm has 36 bulk stations at present and will increase these to 50 during the coming year. The contracts for the marketing the fuel oil stocks enable the plant officials to turn all their attention to the gasoline output and the location of the firm's refineries are such that they can easily compete with gasoline shipped into Montana from refineries outside the State.

Colorado Developments

The Gypsy Oil Co. brought in a good gasser in Colorado the past week when the wildcat being drilled by that firm on the Carbonear Dome, Section 5-8-103 developed a 25,000,000-foot production in the McElmo sand at 3,510 feet. The Carbonera Dome is in Garfield County.

Two wildcats drilling on the Red Mesa Dome, LaPlata County, Colorado, have reported showings of oil similar to the high grade oil found at Hogback, N. Mex. One of these wells is being drilled by Erdman and others on Section 23-38-12 and the other is by the Hall-Murray Syndicate on Section 13-33-13.

The carbon black plant recently built at Lake Basin, near Laurel, is now operating on the gas from that field and pro-

(Continued on Page 145)

FIRST COMMERCIAL OIL AND GAS WELL DRILLED IN SASKATCHEWAN

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ont., Aug. 21. — In the province of Saskatchewan, Unity Valley Oil Co.'s No. 1, southeast quarter of Section 23-41-4w3, has finished a fair gasser at 1,468 feet depth, three heavy flows of gas having been encountered in the drilling, with an oil production estimated between 30 and 50 bbls. a day. The first oil sand was met at 1,130 feet, and was 11 inches thick, while the main production was around 1,250 feet. The oil at this depth was cased off and the rotary test carried deeper in the hope of larger production. One gas showing was met in the upper horizons, estimated at around 500,000 feet a day, and an additional flow around 1,300 feet, good for about 250,000 feet. The third and heaviest flow was met close to 1,468 feet, but its capacity has not yet been estimated. Earlier plans were to drill to 2,600 feet, a second oil sand being looked for at 1,900 feet and a third between 2,200 and 2,600 feet.

The Unity Valley Oil Co.'s test is noteworthy as the first producing oil well and the first commercial gas well drilled in Saskatchewan. The location is about 50 miles east and some distance south of the Ribstone-Blackfoot structure, and about 8 miles west of the town of Unity. The Unity Valley Oil Co. was headed by R. H. Breckon, of Moose Jaw, an operator in the Kevin-Sunburst Field. About 20,000 acres of territory have been filed on by the company, while local interests also have leases in the district. It is planned to finish No. 1 as a gasser, and to drill No. 2 to test the oil sand at 1,250 feet. No. 2 is expected to spud in some time in September. The oil is a light green product of paraffin base testing 32 degrees Baume.

Turner Valley Field

In the Turner Valley Field, southwest of Calgary, Royalite Oil Co.'s No. 4 during July produced 14,822 bbls. of 73-degree crude naphtha, compared with 14,875 bbls. in June, and 15,308 bbls. in July, 1925. The average for July was 478 bbls. a day. In the same time Royalite's Nos. 1 and 2 wet gassers produced through the company's gasoline absorption plant 18,403 imperial gallons of gasoline.

Royalite's No. 5, LSD 13, Section 7-20-2w5, is reported drilling at 3,515 feet. Royalite's No. 6, LSD 16, Section 31-19-2w5, is drilling at 3,029 feet.

Illinois-Alberta Oil & Refining Co., LSD 14, Section 12-20-3w5, at 3,678 feet is rigging up for the diamond drill outfit which will be used to carry the hole through the Madison limestone. A new boiler is being installed to operate the outfit. It is planned to carry the diamond drill test below the producing horizons encountered in the Royalite's No. 5 and McLeod's No. 2.

McLeod Oil Co.'s No. 2, LSD 16, Section 1-20-3w5, is spudding around the lost tools. Difficulty is being experienced with a ring broken from the bottom of a fishing socket, which will have to be broken up before the bit can be grappled. The company is securing a new naphtha separator with the necessary gasoline drips and connections and when this is installed the producer will be put on the line.

Vulcan Oils, Ltd.'s No. 1, LSD 11,

(Continued on Page 77)

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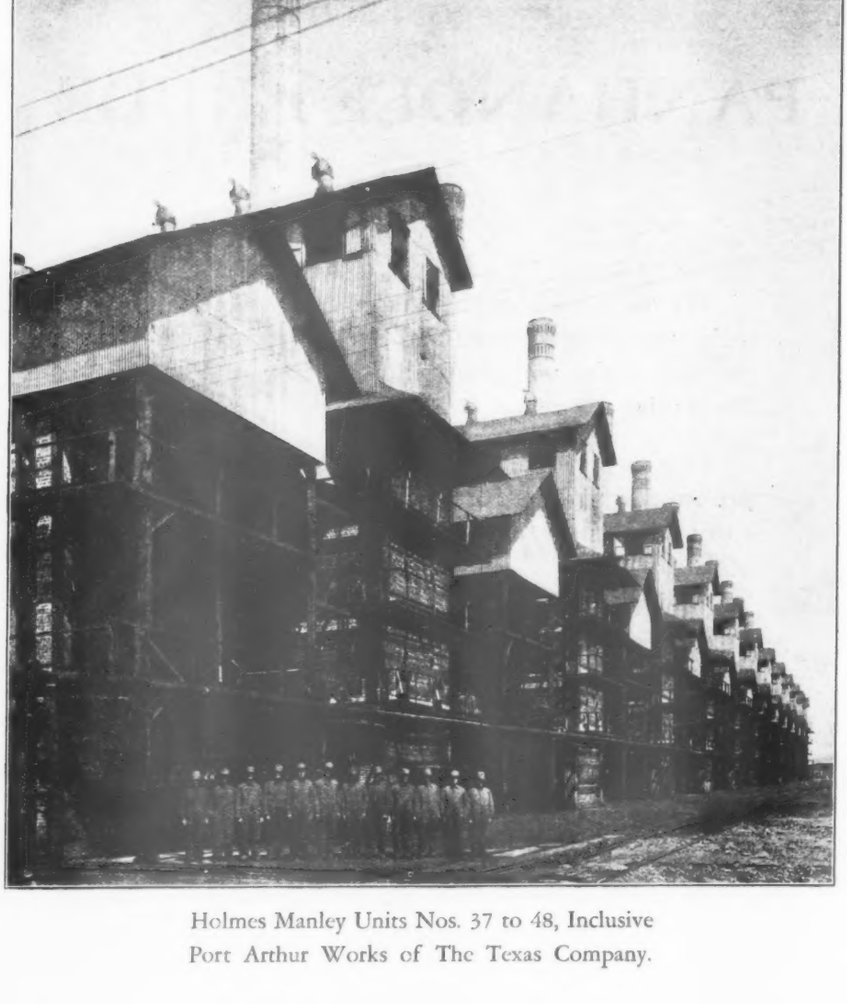

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Owensboro Attracts Big Operators

Great Leasing Campaign in An Area that Promises to Be Coming Oil Field of Kentucky. Ohio Oil Co. Joins Play

By Whit
Staff Correspondent, Kentucky-Tennessee

SCOTTSVILLE, Ky., Aug. 23.—The Owensboro district of the western division of Kentucky is alive with oil scouts and operators in an effort to secure a foothold in what looks like the coming oil field of the state. Oil operations in this section are reaching the fever heat, and there is a scramble for leases close in to production and for miles away from any known producing wells. Real money is changing hands for territory and preparations are in the making for drilling over the district which comprises Hancock, Ohio and Daviess Counties. Around Whitesville is the heaviest play at this time. Leases on thousands of acres are being filed for record in Daviess and Ohio Counties. The Penn-Indiana Oil Syndicate filed 35 leases, representing 2,206 acres, which is but a fraction of its holdings. The Ohio Oil Co., one of the late arrivals in the field, placed for record leases on 1,288 acres and securing additional acreage at every point where surface conditions look good for oil.

C. C. Chrysler, of Dayton, Ohio, in connection with W. F. Spence, Dave Duncan, J. G. Stuart, George Bales and John Powers, local parties, secured a block of 4,000 acres in the Red Hill area and started a test on the Pegram farm, at Red Hill. This concern ran afoul of a bit of bad luck when a cave-in occurred and it was necessary to pull the casing and put in new pipe. Drilling will continue when this is ready. This is in territory far removed from the other field and if it proves productive will start other drilling in that particular area.

Outside of the Scottsville Field of Allen County and the Owensboro district of Hancock, Ohio and Daviess Counties, little was accomplished in the Kentucky-Tennessee Fields. The most important completion was that by the Hatcher Coal Co., on the Colonel James Hatcher property, about 5 miles out of Pikeville, Pike County, in the southeastern part of Kentucky. This well is reported to have reached a depth of 1,909 feet showing a gas volume of 1,500,000 feet, also slight showings of oil in the hole. Oscar Sears, of Charleston, W. Va., was overseer of the drilling. While it may not make a paying oil producer, it is very valuable as a gas well and practically opens up a new gas area for development work.

Two excellent shallow sand producers were uncovered on the Dodson farm, in the Justice Pool, of Allen County, each showing around 75 bbls. initial production, and has caused an interesting excitement around Scottsville. This county has been one of the wonder fields as far as finding shallow production and one of the best ever opened east of the Mississippi River.

The Owensboro district also comes to the front with some very nice producers on the Nannie Brown, J. J. Midkiff and Monroe Collier farms, the wells ranging from 25 to 50 bbls. initial.

The western division of the Kentucky Field is taking the lead over the eastern division in completed work and larger producers, although there are vast areas of virgin territory yet to develop in each division. Carter County, in the eastern end, is taking on a drilling campaign, and while the wells are not large their cost is relatively low, the territory being very shallow.

Week's Work Summarized

A summary of the week's work in the Kentucky Field shows 22 completions, 15 producers with an initial production of 366 bbls., 5 dry holes and 1 gas well. Compared with the previous week, there were 5 more completions, 1 more producer, 507 bbls. less production, 3 fewer dry holes and the same number of gas wells. The wells were distributed by counties and districts as follows:

County—	Comp.	Oil Wells	Prod.	Dry	Gas
Owensboro district	11	6	140	4	0
Allen	6	6	189	0	0
Lawrence-Johnson	3	3	37	0	0
Pike	1	0	0	0	1
Morgan	1	0	0	1	0
Total	22	15	366	5	1
Last week	17	14	873	2	1
Difference	5	1	507	3	0

The decrease in production for the week against the previous week was due to the fact that the famous Cumberland and Clinton Counties failed to land the usual big producers as was the case during the previous week, and to that alone is due the decrease.

Kentucky Oil Runs

During the month of July 452,100.36 bbls. of crude oil were run through the major pipelines, making their reports in Kentucky. The eastern division led with 322,563.88 bbls. This crude was purchased by the Cumberland Pipe Line Corp. and runs as follows: Week ending July 3, 66,548.78 bbls; week ending July 10, 67,143.69 bbls.; week ending July 17, 58,417.61 bbls.; week ending July 24, 61,964.74 bbls.; week ending July 31, 68,489.06 bbls.

Pipeline runs during July in the western division amounted to 129,536.48 bbls., an increase of 9,507.58 bbls., compared with the June figures. The runs were distributed by counties and districts as follows:

	Runs	Increase	Dec.
Warren	36,583.74	1,502.74	.....
Barren	20,370.26	.....	542.91
Allen	26,469.96	1,363.59	.....
Cumberland, Monroe, Clinton	4,511.17	932.16	.....
Owensboro district:			
Ohio County	35,328.07	6,292.74	.....
Hancock County	2,944.62	327.44	.....
Daviess County	1,189.26	.....	236.40
Hopkins	1,270.00	.....	93.66
Simpson	797.75	30.04	.....
Logan	71.65	.....	68.16
July runs	129,536.48	10,448.71	941.13
June runs	120,028.90		
Difference	9,507.58		

Eastern Division

Development work is rather quiet throughout the eastern division of Kentucky as few completions are reported from that area. The real feature is the bringing in of a good gas well by the Hatcher Coal Co., on the Col. James Hatcher property, about 5 miles from Pikeville, in Pike County. This well had slight showings of oil and was drilled to a total depth of 1,909 feet, where a strong gas vein was opened up, the well being reported as good for 1,500,000 feet, and one of the best gassers of any late completion in that mountainous section of the state. Oscar Sears, oil man of Charleston, W. Va., had charge of the drilling, and while he thinks that it will hardly make an oil well of commercial value, it shows that oil may be found in the vicinity and that the well is more valuable as a gas producer.

The Petroleum Exploration Co.'s test on the Craney Creek Dome in District 6 of Morgan County, failed to show any oil in the Weir sand and may be drilled to a greater depth in hopes of picking up some new producing sand lower down.

In the North Weir Field of Lawrence-Johnson Counties, in District 22, the Swiss Oil Corp.'s No. 10 on the R. N. Sparks No. 1 lease, is estimated at 10 bbls. from the Weir sand. This company is drilling No. 23 on the C. K. Dobyne No. 1 farm, in District 22-A. In District 32, the same company's No. 45 on the P. P. Holbrook farm looks like a 15-bbl. initial producer, while No. 32 on the Mrs. Proctor Sparks farm, same district, is showing for 12 bbls. Same company is drilling No. 21 on the J. M. Fyffe farm, District 33.

Sampson, Asher and others are starting a wildcat well on a 30,000-acre block of leases on Pleasant Run and Marsh Creek, approximately 4 miles north of the Tennessee line. These tests, of which there may be a number, will be drilled to the well-known Beaver sand, lying close around 1,100 feet below the surface. This is in McCreary County, which lies to the east of the old Wayne County Field of Kentucky and north of the development in Scott County, Tennessee. The McCreary Oil & Gas Co. is down around 500 feet in a new well near production. Two old wells out of nine were cleaned out by this company, resulting in a monthly production of 500 bbls. Others will be cleaned out as rapidly as possible.

Western Division

In the western division of Kentucky, the Owensboro Field takes the lead in completed work for the week with 11 wells completed, while Allen County comes forward with some excellent shallow sand producers that will eventually bring about a more active drilling campaign. For months past quietude prevailed in this county but now it looks as though the turning point had been reached and that much new work will be shown. Recently Pennsylvania parties purchased the lease and wells on the Williams farm, in the Johnson Pool, for a reported price of $40,000. These wells have been consistent producers but will be cleaned out and should show a much heavier output.

In the new addition to the Swope Pool the White Plains Oil & Gas Co. is installing a power pumping plant on the Joe Bob Ellis 50 acres, for which this company paid Ellis $5,000 for the 50-acre lease. Several very nice producers have been drilled on this lease as well as on another 50 acres of the same farm, held by Loman Brothers, now known as the Ell's Oil Co. The White Plains Co. has just drilled in what is reported a 50-bbl. initial well in No. 6 on the J. J. Midkiff Pool a few miles in advance of the Swope Pool, the oil being found in the Barlow sand.

The Ellis Oil Co., owned by Loman Brothers, brought in what shows for only a fair pumper in No. 5 on the Joe Bob Ell's 50 acres, which does not make as good outlook as other wells on the lease, although it is a commercial producer, estimated around 10 bbls. initial.

In the Swope Pool extension, the Chicago Petroleum Syndicate's second well on the Guenther-Gant 114 acres, proved dry in both the Jett and Barlow sands, finding no showing in the Jackson sand. Same company's test on the Nannie J. Brown 80 acres, an offset to No. 3 on the J. L. Phillips farm, has been drilled in and estimated better than 25 bbls.

(Continued on Page 116)

QUIET WEEK IN LOWER EASTERN FIELDS WITH LITTLE WILDCATTING

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Aug. 21.—Operations in the lower eastern fields for the past week were again unsatisfactory. Lack of completions and nothing much above the average size aroused no interest in development work. The first two weeks of August shows fewer completions and less new production than for any like period since the first of the year.

The shallow sand districts are the only ones in which there is any activity. A light pumper or a dry hole in that territory does not represent a great outlay in money.

There are but two sections in West Virginia that are doing considerable new work—Ritchie County and Henry district, Clay County. These two are furnishing more new production than all others. Both are located in comparatively shallow territory. The oil is found in the Big Injun sand. In quite a number of the old districts there is still considerable work under way, much of it drilling old wells to the lower sands.

At the present time there is nothing doing in the way of drilling for oil or gas below the regular production formations. In Union district, Harrison County, West Virginia, the Reserve Gas Co. is still fishing for casing at its deep test on the Smith Brothers' farm.

Best Completions for the Week

West Virginia completed the largest well for the week just closed. It is the South Penn Oil Co.'s No. 7, on the Clyde Atkinson farm, located on Meadow Run of Goose Creek, Grant district, Ritchie County. It is a natural producer good for 100 bbls. a day in the Big Injun sand. No. 8, on the same farm, is good for 25 bbls. a day.

The Big Injun sand development in Henry district, Clay County, completed a few wells and nearly all below the average size. However, there were enough of them to keep the pool from showing a decline. It is still the most active of any in West Virginia. The gas companies are doing less work than at any time since the first of the year.

Southeastern Ohio failed to complete a well with an initial production of 100 bbls. a day. In Section 21, Union Township, Knox County, the Ohio Fuel Supply Co. got a Clinton sand well that produced 60 bbls. the first 24 hours after shot, when it completed a test on the Lesley Lower farm.

In the northwest quarter of Section 28, Harrison Township, Perry County, the Leonard Oil & Gas Co. completed a test on the Mary Butts farm. It produced 45 bbls. the first 24 hours after shot in the Clinton sand. The total depth of the well is 3,519 feet.

The southwest Pennsylvania fields had only a few completions. The only remarkable feature was the way the Consumers Fuel Co.'s No. 1 on the Thomas Anderson farm, in Morris Township, Greene County, has been holding up since shot, 10 days ago. For more than a week the production did not drop below 400 bbls. a day.

Week-End Developments

Just at the close of the week, the southeastern Ohio fields presented two fair producers. Both got their production in the Berea grit and are much above the average for that formation. The bet-

(Continued on Page 112)

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New Berne, Ind., Field a Golden Lane

Adams County Shoestring Has Fifth Straight Producer. A 120-Barrel Producer in Wabash Counnty, Illinois

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Aug. 21.—Only eight completions were reported the past several days from the Central Ohio gas field, two being oil wells with 16 bbls., two dry holes and four gas wells. Since the last report only three new locations were staked out for wells and 11 more are said to be rigging up or drilling.

The most important of the late completions was that made by Bode, DeLong and others in a test, 750 feet from the north line and 150 feet from the east line of the G. C. Davis 39 acres, in the southwest quarter of Section 7, at Bolin Mills, in Knox Township, Vinton County. The well is credited with an initial production of 8 bbls.

In the Cleveland Field of Dover Township, Cuyahoga County, Dempsey Brothers' test in the northwest corner of the J. Gessner farm, Lot 28, is rated as good for 3,000,000 feet of gas in the Newburg sand. Same firm is drilling a test in the northwest corner of the H. F. Eyring 2 acres, Lot 18. The Ohio Pipe & Supply Co., has started drilling a test in the southwest corner of the E. Rice 6 acres, Lot 6, and Arthur & Simpson are at work on a test in the northeast corner of the H. Martin 30 acres, Lot 16.

In Tiverton Township, Coshocton County, the Logan Gas Co., has started drilling a test in the southeast corner of the W. S. and Sarah Cooper 242 acres, Lot 5, also drilling No. 3 well, 583 feet east of No. 2 and 300 feet from the north line of the E. R. and O. M. Van Winkle 165 acres, Lot 18, Perry Township, same county. The Ohio Oil Co. is drilling a wildcat in the northwest corner of the Robert L. McKelvey 39 acres, Section 2, Monroe Township, same county.

Daily and Son are drilling a wildcat in the northwest corner of the Joe Robinson 68 acres, Section 30, Cannan Township, Athens County.

In Franklin Township, Wayne County, the Ohio Oil Co.'s No. 11 on the D. E. Schmuck farm, Section 23, is reported at 8 bbls. initial production. In Bauchman Township, the Logan Gas Co. is drilling a test in the southeast corner of the Lydia C. Garber 206 acres, Lot 7. In Plain Township, the East Ohio Gas Co.'s No. 5 well, 650 feet from the south line and 1,750 feet from the east line of the Ada Todd 164 acres, Lot 36, proved a dry hole. In Green Township, same county, W. E. Hawk and others' are drilling a second test on the C. S. and C. A. Eby 134 acres, Section 6.

In Columbia Township, Lorain County, the Empire Gas & Fuel Co.'s test in the northwest corner of the M. O. and B. B. Francis 110 acres, Lot 7, was a dry hole at a depth of 2,925 feet.

Big Gasser After a Shot

In Spencer Township, Medina County, the Logan Gas Co.'s test on the Ellsworth Breley 78 acres, Lot 4, produced 810,000 feet of gas, but after given a 40-quart shot responded with a volume of 1,627,812 feet. In Granger Township, the Empire Gas & Fuel Co. is drilling a test in the northeast corner of the Thomas Sylvester 100 acres, Lot 38. In Lafayette Township, John Arthur shot his test in the southeast corner of the W. A. McCabe 8 acres, Lot 11, but given a shot and increased to approximately 800,000 feet. In Westfield Township, the Logan Gas Co. staked a location for a test near the northwest corner of the O. E. Daniels 50 acres, Lot 23.

In Ashland County, Orange Township, the Logan Gas Co. struck a nice gas well at a test in the northwest corner of the Floyd Shaum 104 acres, Section 3. In Hanover Township, the Ohio Fuel Gas Co. is drilling a test in the southwest quarter of the Thomas Miller 160 acres, Section 16.

In Jefferson Township, Knox County, the Ohio Fuel Gas Co. made a location for a test in Section 23, on the J. M. Miller 75 acres.

Lima Field

A couple of weeks ago the South Bend Producers Co. brought in a 40-bbl. producer on the C. A. Cooper 4 acres, in the southeast quarter of the northwest quarter of Section 12, Ridge Township, Wyandot County and at that time it looked as though a new and interesting pool was found. The same company has just drilled in No. 1 in the southeast corner of the S. B. Chesbrough farm, in the same quarter section and only 400 feet east of the Cooper farm producer, getting a rank duster, with top of Trenton at 1,439 feet and drilled 177 feet in the sand to a total depth of 1,616 feet. This company's producing well on the Cooper struck the top of the Trenton at 1,361 feet, showing a dip of 78 feet in the sand and only 400 feet apart, which is characteristic of some territory in the Trenton Rock Field. The Ohio Oil Co. is nearing the sand on the G. Tong farm, Section 13 and not far away from the producer and dry hole of the South Bend company.

In Mississinewa Township, Darke County, the Cole Oil & Gas Co. made a very good strike in its No. 14 well, 400 feet from the north line and 700 feet from the west line of the W. C. Disher farm, in the northwest quarter of Section 11, the well showing a natural initial production of 25 bbls. the first 24 hours. Top of sand at 1,220 feet and drilled 30 feet in the sand.

Near Elmore, in Harris Township, Ottawa County, Gust Magsig and Sons' No. 14 well, 200 feet from the south line and 600 feet from the east line of the Charles H. Magsig farm, Section 23, pumped 15 bbls. initial at 45 feet in the Trenton, which was topped at 1,248 feet, making a total depth of 1,293 feet.

At Tiffin, in Clinton Township, Seneca County, Arthur E. Geyser's test, 600 feet from the south line and 400 from the east line of the A. E. Geyer property in the southwest quarter of Section 29, struck top of Trenton at 1,554 feet and drilled 254 feet in the sand to a total depth of 1,808 feet, getting a 1-bbl. initial producer.

Several miles south of the historic town of Perrysburg, in Perrysburg Township, Wood County, the Oko Oil & Gas Co. of Lima, drilled in No. 3 well, 850 feet from the north line and 250 feet from the east line of the Charles Thaiss, Jr.'s, farm, resulting in an initial producer good for 25 bbls. at 1,290 feet, or 47 feet in the sand. Same company's No. 3 well 840 feet from the south line and 250 feet from the east line of the J. J. Heilman farm, Section 28, same township, pumped 6 bbls. initial. Sand was found at 1,244 feet and drilled 53 feet in the sand.

The old Cygnet-North Baltimore Field of Henry Township, Wood County, was extended a short distance when the Ohio Oil Co. drilled in a 15-bbl. pumper at a test in the northeast corner of the J. P. Cleary farm, mapped as the G. S. Doyle farm, in the southwest quarter of Section 21. Top of Trenton at 1,252 feet and drilled 280 feet in the Trenton to a total depth of 1,502 feet.

Indiana

The new Berne Field in Adams County, Indiana, is among the most active of any of the present producing fields of Indiana, the past few days seeing three new wells completed and shot. Heading the list is the No. 2 drilled by John H. Harmon and Dick Watts together with their several associates all of Mansfield, Ohio, on the John Smitley 80 acres, Section 6, Jefferson Township, Adams County. This well topped the Trenton sand at 1,075 feet and was drilled 45 feet into the sand to a total depth of 1,120 feet. The well was given a shot of 80 quarts and sprayed nicely for a long time after the shot exploded. In less than an hour after the shooting the well filled up with 500 feet of fluid and in two hours showed 800 feet in the hole. This well has been estimated around 75 bbls. initial and considered the best completion yet made in the new field which has been called the "Golden Lane." The owners of this well have already located five straight producers in the field. Mr. Watts said, in his opinion, the Berne Pool will be the most active spot in the entire Trenton Rock Field. He also states that this new Smitley well, in his opinion, proves up a scope of oil producing area between the Niblick lease to the northeast to the Kelly and Daugherty wells several miles to the southwest. This is the second well for the farm, No. 1 coming in several weeks ago at 24 bbls. No. 3 is starting 500 feet to the east of No. 2.

In the same field, John H. Harmon and others brought in their No. 6 on the Mary J. Niblick 242 acres, Section 6, same township, and good for 18 bbls. initial. No. 7 has been started. W. E. McKelvy of Pittsburgh, has started his second well on the William Bollenbacher 40 acres, same section, and mapped as the Alfred Elliott farm. Alvin C. Spindler, well known operator of Pittsburgh, is starting a well on the Wilson 39 acres, Section 7, same township, and expects to soon start a well on the Nancy Reynolds 154 acres, same section. The Wilson lease is a direct offset to the good well on the Smitley farm and the contract for the drilling has been let to Hanes Brothers, well known contractors of Newark, Ohio.

W. E. McKely will drill an offset to the good well on the Smitley farm, which will be on the John Peel 80 acres, Section 6, Jefferson Township, Adams County, and George S. Lacknett, another well known Pittsburgh operator, will drill to the south of the Smitley well on the Dan Boze 80 acres. Mr. Lacknett has shipped in a carload of material, enough for a large number of wells and has moved some onto the John Parr farm, just east of the Niblick farm.

M. S. Daugherty of Washington Court House, and William Kelly of Geneva, Ind., are now drilling a test on the B. Parr 160 acres, Section 12, Wabash Township, Adams County. Fink and Smith of Fort Wayne, are starting their No. 2 on the Mrs. Dan Hawbacker farm, Section 17, same township. Ray Grimm of Fort Laramie, Ohio, is shipping an outfit from his home to Berne and will drill a well on its arrival on either the Zehr or McDaniel farms, south of the Niblick farm, in Jefferson Township.

Good Wells in Adams County

In Blue Creek Township, Adams County, Schulte, Haney and others' No. 7 on the Schulte farm, better known as the Runyon farm, Section 16, and reported

(Continued on Page 110)

SAGINAW'S 21ST PRODUCER PROVES UP BLOCK OF LEASES

By Whit
Staff Correspondent, Michigan Fields

SAGINAW, Mich., Aug. 20.—Quite a block of territory was added to the Saginaw Field, when the Ohio Oil Co. drilled in its test on the Mershon-Eddy-Parker Co.'s property, east of Michigan Avenue and north of the Pere Marquette Railroad. The Ohio Oil Co.'s test is fully one-third of a mile northeast of its nearest producing well which is the Saginaw Prospecting Co.'s No. 4. The intervening territory is mostly town lots, however, which many oil men do not consider particularly desirable locations for operations. This makes the twenty-first producing well for the field out of 22 wells completed, an enviable record for any new field. The top of the Berea sand was struck in the Ohio Oil Co.'s well at 1,806 feet, being the shallowest yet found in the field and indicates that the sand rises to the east. This may be due to the surface elevation being lower as there is a drop of 9 feet from the Prospecting Co.'s No. 4 well and about 7 feet lower than the Superior Oil Co.'s well on the Spatz farm.

The value of the Ohio Oil Co.'s well as a producer is not as yet known, although it has swabbed 25 bbls. in a day, helped along by the nice spray of oil. It was opened for a time Thursday evening while work was being done on it, and flowed naturally, shooting oil as high as the top of the mast. It looks just as good as any well drilled in the field and makes the territory eastward inviting to the public. It drilled into 10 feet of Berea and was given a 40-quart shot of nitroglycerin.

The Saginaw Prospecting Co.'s No. 1, on the John Bremer farm, Section 14, has all the earmarks of a 20-bbl. producer and swabs 15 bbls., which did not lower the fluid in the hole to any extent. This company's No. 1, on the Waterworks Park Subdivision, is making a better showing than expected. When shot it swabbed 35 bbls. in 24 hours and should make a 25-bbl. pumper from the well-known Berea sand.

Important Tests Due Soon

All are watching the next important well that is nearing the pay sand and which will prove up a vast area of territory, if it makes a commercial producer. That is Charles Murrins' test, on the Henry Owen farm, Section 13, Thomas Township, Saginaw County and west of the Tittabawassee River, 5 miles west of the discovery well of the Saginaw Field. This well has been delayed when at a depth of 1,300 feet, awaiting the arrival of a wire line.

Another test that should reach pay within a short time is the test of Jack Hendricks and others of Detroit, on the Leonard Gehringer farm, just across the Saginaw County line in Bay County, and about 5 miles north of the Saginaw Field, east of the Bay Road. Last report from this well was that it was down below 1,500 feet.

Gardner Drilling Deeper

Two other wells in Saginaw County are being watched with much interest. They are the Gardner Petroleum Co.'s test on the Schwannecke farm, on the Hess Road, in Section 33, Buena Vista Township, and about 5 miles southeast of the discovery well and southeast of the city of Saginaw. This well proved dry

(Continued on Page 110)

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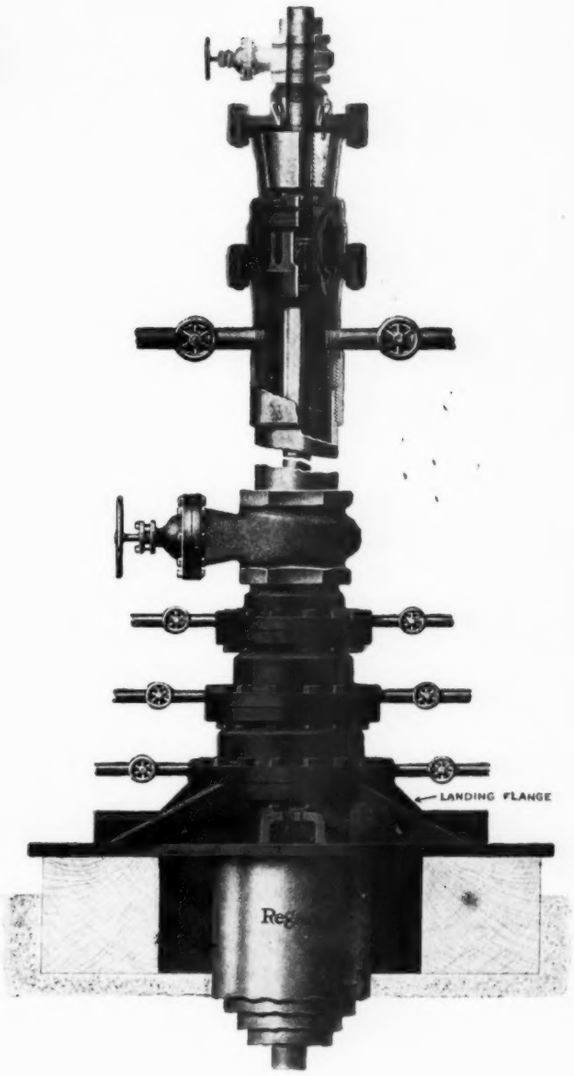

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MEN KNOWN IN OILDOM

S. M. Grogan

The rise of S. M. Grogan, recently elected vice president of the Louisiana Oil Refining Corporation, Shreveport, La., has been rapid. Seven years ago he identified himself with the Acme Petroleum Company, of Chicago, after resigning a position with a railroad company.

A year later he was sent to the Tulsa offices of the Acme, as assistant sales manager. The next year found him in Dallas, Tex., as manager of the Acme's Dallas division and a short time later the Shreveport office of that company was placed under his direction.

In March, 1924, he was made manager of the wholesale sales department and a few months later he was promoted to general sales manager. In recognition of his executive ability and faculty of organization he was made assistant to Vice President Bennett on June 15. When the board of directors of the Louisiana met in New York, July 28, they elevated him to the vice presidency.

Peculiarly enough Mr. Grogan's service with the oil industry has been with only two companies. During those seven years of service, he has gained a wide and varied knowledge of the petroleum industry and is well known throughout the Mid-Continent.

Mr. Grogan was born in Chicago, in December, 1895, and he received his education in that city. He is married and has one son.

PERSONAL PARAGRAPHS

W. H. George and C. A. Reed, New Orleans, La., marketers, were recent visitors in Shreveport, La.

* * *

R. A. Griffith, president of the Sinclair Oil & Gas Company, is spending his vacation in Minnesota.

* * *

D. P. Hamilton, vice president of the Root Refineries, Shreveport, La., is in Colorado on vacation.

* * *

Charles Markey, of the Link-Belt Company of Indianapolis, is making another tour of the Mid-Continent oil fields.

* * *

D. T. Evans is now with the Texas Pacific Coal & Oil Company of Fort Worth, Tex., in the lubricating oil sales department.

* * *

W. L. Franks, of the LaPlant-Choate Manufacturing Company of Cedar Rapids, Iowa, is making a tour of the Mid-Continent Field.

* * *

Harry L. Norris, chief scout of the Prairie Oil & Gas Company, is spending his vacation by taking a motor tour of points "north" of Tulsa.

Ray O'Brien, independent operator, has returned to his home in Shreveport, La., from a several weeks' trip into Canada.

* * *

F. A. Gustafason, vice president of C. A. Gustafason & Company, Chicago, Ill., was a recent visitor in Shreveport, La.

* * *

J. Edgar Pew, president of the Twin State Oil Company, Dallas, Tex., is spending a month's vacation in Minnesota with his family.

* * *

Solon Walker, of the Moon Oil Company, of Chicago, Ill., was in Shreveport, La., last week on business.

* * *

James N. Dunlavey, of the Unity Petroleum Company forces at El Dorado, Ark., is visiting his parents at Olean, N. Y.

* * *

Ralph Johnston, head of the Sinclair Oil & Gas Company land office at Cisco, Tex., spent a few days at the Tulsa office of the company.

* * *

C. W. Hughes, petroleum engineer of Tulsa, Okla., has returned from a motor trip to Louisiana where he inspected the Urania and Monroe fields.

* * *

William R. Capron, of the Sinclair Crude Oil Purchasing Company's executive family, is the proud father of a son who has been named William Campbell Capron.

* * *

J. H. Berry, formerly store manager of the Continental Supply Company at Tonkawa, Okla., has been transferred to the Texas Panhandle, as assistant district manager.

* * *

H. R. Baughner, Tulsa representative of the O. C. S. Manufacturing Company of Coffeyville, Kans., has returned from a tour of Montana, Wyoming, and Calgary, Canada.

* * *

C. A. Gilliam, of the firm of Gilliam & Logan, independent operators of Fort Worth, Tex., took his family to Bella Vista, Ark., last week on a vacation trip.

* * *

W. T. Christman, superintendent of the Shreveport Producing & Refining Corporation, Shreveport refinery, has resigned effective September 1, and will leave on that date for Los Angeles, Calif.

* * *

J. J. Moroney, president of the North Baltimore Oil & Gas Association of Okmulgee, Okla., writes from Hawaii that he feels himself slipping for the thrum and whine of the "uke."

* * *

Phil B. Dolman, consulting geologist of Tulsa, Okla., has returned from a three months' trip spent in examining various sections of Texas.

* * *

Talbot C. Wildman, president of the Wildman Petroleum Company of Fort Worth, Tex., spent a few days in Tulsa, Okla., recently visiting old friends.

* * *

J. B. Atkins, vice president and general manager of the Shreveport Producing & Refining Corporation, was in New York City last week on a business mission.

* * *

B. H. Carnahan, son of a well-known pioneer in the oil business, resigned as the head of the gaugers in the Bureau of Mines and will be employed in the future in private work.

* * *

W. A. Miller, president of the Illinois Pipe Line Company, visited the Sunburst Field the past week and inspected the new pipeline the Illinois has completed from the field to Shelby, Mont.

* * *

Guy W. Mosley, of Fort Worth, Tex., who has charge of the White Eagle Oil & Refining Company's north Texas office, left town Sunday morning for a two weeks' vacation in the Ozarks around Bella Vista, Ark.

* * *

E. C. Marshall, general superintendent of refineries for the White Eagle Oil & Refining Company, with headquarters in Kansas City, Mo., spent several days in the Fort Worth office of the company this week and inspected the White Eagle refinery there.

J. S. Hasson, general superintendent for the Ohio Oil Company, in the Louisiana-Arkansas district and John Hasson, Jr., scout for the Ohio, are spending several days in Ohio and will return to Shreveport, La., by motor about the first of September.

* * *

C. J. Flanagan, formerly field superintendent of the Pine Island (La.) district for The Texas Company, is now connected with the production department of the Continental Oil Company at Shiprock, N. Mex.

* * *

H. C. George, director of the school of petroleum engineering at the University of Oklahoma, is engaged for the summer in geological work for a group of Oklahoma oil operators in the southwest Texas fields. He is making his headquarters at San Antonio, Tex.

* * *

H. M. Fennemore, F. H. Stahl and John M. Logan figure as incorporators of the Continental Oil Company in Arizona, of which S. H. Keoughan, W. H. Ferguson, A. B. Ferrea and C. F. Smith of Denver, Colo., and William H. Geis of Los Angeles, Calif., are named as directors.

* * *

W. C. McBride, Inc., of St. Louis, Mo., which has had proven acreage in Somerset Field in Bexar County, Texas, for some time and is otherwise interested in that part of Texas, has opened an office in the Frost Building there. R. H. Smith has been placed in charge of the office.

* * *

A. S. Russell has been appointed vice chairman, manufacturing committee, of the Stanard Oil Company of California; R. T. Osborn, manager, Richmond refinery; W. G. Hamilton, superintendent, Richmond refinery; A. C. Moorhead, assistant superintendent, Richmond refinery.

* * *

F. W. Cole, former draftsman at the Bureau of Mines office at Casper, Wyo., who left about three years ago in company with Ernest Marquardt, to make an extensive geological examination of possible oil or gas areas in Australia, has returned to Casper and was warmly welcomed by his many friends. He is again with the Bureau of Mines, in the mineral leasing division.

* * *

J. J. Flanagan, field superintendent of the Continental Oil Company, with Casper, Wyo., as headquarters, was thrown through the windshield of his car recently in an accident that occurred between Casper and Big Muddy Field. Mr. Flannagan was driving at a rather slow speed when the steering gear broke and let the car go into the ditch. He received some bad cuts about the face, but due to the moderate speed he was going, the accident was not serious.

* * *

L. S. Harlowe, Louisiana Oil Refining Corporation geologist, was recently promoted to chief geologist to succeed J. P. D. Hull, resigned. Mr. Harlowe's headquarters are in Shreveport, La., and his years of service with the Louisiana Corporation have been divided in Louisiana and east Texas fields.

* * *

The National Supply Company has closed the store at Basin and is moving the stock to Casper, Wyo. E. K. Cochran and R. H. Baillie, who have been taking care of the trade at Basin, have been transferred to Casper and will be in the Casper store. The National Supply Company established the store at Basin, Wyo., when the Grass Creek Field first came into prominence. Ira G. Wetherill and Carl Clymer were among those who saw the possibilities there and through their influence, the National Supply Company became a large factor in the oil business in the Big Horn Basin.

* * *

J. A. Murphy, of Philadelphia, was a business visitor in Casper and the Wyoming oil fields the past week. Mr. Murphy is a son of the late Michael Murphy, the famous head of the old Pure Oil Company, and founder of that firm in the early days of oildom. The sons of the great pioneer have formed the present Murphy Oil Company, operating in the eastern and Mid-Continent fields. Mr. Murphy stayed over the week-end in Casper, visiting the Salt Creek Field and then left for Billings, Mont., and from that point he expects to go to the Pacific Coast. Mrs. Murphy accompanied her husband.

"OILWELL" ESTD. 1862 C O TRADE MARK (REGISTERED)

FOR OVER 50 YEARS "OILWELL" JARS HAVE BEEN THE MOST POPULAR IN EVERY FIELD

There must be a reason:

"OILWELL" originated and patented the Fuller Crotch—the greatest single improvement made in jars.

"OILWELL" also first conceived and employed the practice of heat-treating jars.

Per foot of well drilled, "OILWELL" Jars are the cheapest.

"OILWELL" renders a national service through 100 Branches located throughout the oil fields.

AN "OILWELL" VETERAN

A Set of 5½-inch "OILWELL" Drilling Jars, with 2¾"x3¾" joints, in Poland. These jars were used from October 7, 1924 until April 15, 1925, in both drilling and underreaming, and after more than six months of continuous service were still in good condition.

OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

EQUIPMENT AND SUPPLIES

UNITED IRON WORKS TAKES OVER SPARTA

The United Iron Works, Inc., of Kansas City, Mo., has taken over the manufacture of Sparta drilling machines, and several improvements have been made in their construction.

The new features include steel frames, direct-driven bailer pulley, an auxiliary beam for spudding, the engine mounted on a caterpillar, and twin disc clutches.

The machines are all steel excepting the cants on the band wheel. The elimination of a friction pulley for operating the bailer is another feature of note. By the introduction of the direct-driven bailer pulley the lost motion generally encountered in drilling machines is removed, and a much greater speed is made possible in pulling the bailer from the hole.

The auxiliary beam for spudding is also interesting. When this beam is not in actual use, it is conveniently put aside. The mounting of the engine on a caterpillar increases the mobility of the entire equipment, and permits the machine to be moved under its own power. It will reduce hauling and moving charges by this arrangement.

The machine comes equipped with a 50-horsepower Buda gasoline engine.

After much experimental work, a 3½-inch shaft was decided upon for transmission.

Pictures of the new machines show that when ready for a move, the beam may be placed on top of the housing, and the machine can be quickly and compactly transported.

TRADE LITERATURE

The Butler Manufacturing Co., of Kansas City, Mo., and Minneapolis, Minn., has distributed book No. 92, devoted to the Butler complete ready-made steel buildings. The book is amply illustrated and shows some tests to which the metal used in this type of building construction is subjected.

A very valuable addition to the library of anyone interested in deep well pumping is a book printed and distributed by the D&B Pump & Supply Co. of Los Angeles, Calif. This book has a wide range of application. It gives in simple and concise language a treatise on the fundamentals of oil well pumping, and for those who wish to consider the more intricate angles of pumping it has several interesting paragraphs such as static and dynamic forces, strains, stresses and counterbalancing. It is very well prepared and bound and fills a gap in reliable deep well pumping data.

The Homestead Valve Manufacturing Co. of Homestead, Pa., has mailed to the trade a booklet entitled "Valve Economy."

Wilson-Snyder, of Pittsburgh, Pa., has sent out folders describing its long stroke boiler feed pumps.

The August number of Oxy-Acetylene Tips contains an article entitled "Testing Pipelines and Pressure Vessels." The story explains the method and equipment used in determining whether lines and vessels are water or air tight.

The Oil Field Tool Co. of Houston, Tex., has distributed folders on the Hindmand universal subswivel.

"Cable Tool Drilling Power Units" is the title of a new bulletin just issued by the Climax Engineering Co., Clinton, Iowa, describing their Climax drilling outfit designed to be used for cable tool work.

DELIVERY OF OIL COUNTRY PIPE IS EASY WITH MILLS AT CAPACITY

By B. E. V. Luty

PITTSBURGH, Pa., Aug. 23.—Deliveries of oil country tubular goods do not seem to be any harder to secure than a week ago, and possibly are a trifle easier. In ordinary years the high point in requirements would have been passed before now, but this is altogether an exceptional year. It appears that some of the pipe mills can now offer deliveries to regular customers in the fore part of September, provided the sizes are not unusual, and that would represent a slight shortening in the delivery time.

Demand is, of course, still engaging the full lap weld capacity of the industry, except for a little practically obsolete equipment. There is new buying right along. The size of the demand for well material appears all the more remarkable when it is considered that the production of line pipe at the present time, while fairly heavy, is not as heavy as it has been in some other years, 1923 in particular. Some of the orders will be completed in the next few weeks, while others will string out well to the end of the year. For two or three months past there has been a good bit of line pipe business more or less in sight, but it has not been coming to a head. The mills have not invited the business and the prospective buyers no doubt feel they will do much better to wait. They would get better deliveries and perhaps closer prices, since the demand for well material certainly cannot run along through the winter at the recent pace.

A slight slowing down in buying of merchant pipe is reported in some quarters, but there does not seem to be any change of real moment. It is said that such mills as have lighter deliveries of merchant pipe now are continuing their production just the same in order to round out stocks, which have been greatly depleted by the active demand of the past three months.

Pipe Mills at Capacity

Pipe mills as a whole are estimated to be operating at above 90 per cent of full theoretical capacity, and they may be regarded as operating at full practical capacity, and with heavier tonnage than usual because with business piled up ahead the equipment can be scheduled for particularly efficient operation.

The steel industry as a whole is in better position and has a better outlook than for several months. This is a matter of common remark in steel circles and the appraisal can be taken as trustworthy because it is clear that it is in no sense based upon theory or sentiment, the theory being rather the other way, that when steel has been so active for such a long time the chances of something going wrong would naturally be piling up. While the position and outlook are better than a few months ago that does not mean that conditions then were not good. It is simply that usually the summer either makes a dip in activity and something definite is required to lift the trade again. This year there was practically no dip and mills are now running a trifle better than in July.

The marvel is that such an enormous tonnage of steel can be absorbed month after month without any line becoming satiated, or indeed that there can be such a heavy movement without a number of important steel consuming lines being conspicuously active. In fact, the only steel consuming line that does show plainly an unusual degree of activity is oil and gas well drilling. Building is heavy, but so it has been right along and the same is to be said of automobile trade activity. Freight car building has not been active. It is taking much less steel this year than in many previous years.

Steel prices are very steady all along the line, and are practically in the same position as on July 1, except that all grades of sheets are firmer while black and galvanized are quotable a shade higher, i.e., galvanized can be called 4.30 cents flat against 4.20 cents to 4.30 cents formerly quotable, and black are better established than formerly at 3.10 cents to 3.15 cents. Standard billets are firm at $35, Pittsburgh, Youngstown or Cleveland, with $5 extra for ordinary forging quality.

L. C. HARBERT PROMOTED

Announcement has just been made from the Los Angeles office of J. P. Ratigan, manufacturers of oil well specialties, of the appointment of L. C. Harbert as general sales manager for the organization, with headquarters in Los Angeles. Mr. Harbert has for the past year been manager of the Tulsa branch for J. P. Ratigan, and has made remarkable headway introducing the Ratigan specialties into the Mid Continent Field.

OPENS TULSA OFFICE

H. F. Bergmann has opened offices at 207 East Third St., Tulsa, to act as southwestern representative of concerns manufacturing crane and tractor equipment. He will represent The Vergan Schmidt Co., manufacturer of the "Tractocrane," distributed through Thaleg and Hock of Chicago, Ill.; the Orton crane, manufactured by Orton Crane & Shovel Co., of Chicago; and the LaPlant-Choate Tractor Equipment, of Cedar Rapids, Ia.

OIL FIELD TRACTORS IN UNIQUE RACE

The above picture shows the quarterly inspection of tractors on one of the Phillips Petroleum Co. leases in the Burbank, Okla., Field. Following the inspection, a tractor race was held. The tractors were lined up, with the drivers in front of the machines. At the signal each driver was required to start his machine and make a dash of 45 feet. The machine winning the prize made the time in 29 seconds, and the second money was won by a machine performing the task in 35 seconds.

PERSONALS

J. W. Cary, Oklahoma City representative of the National Lead Co., is back at work after four weeks' vacation spent in the Ozark Mountains.

Burt S. Shafer, field manager of the tubular sales division of the Wheeling Steel Corp., passed through Tulsa on his way to Texas.

O. A. Karcher, Fort Worth representative of the Youngstown Sheet & Tube Co., was a Tulsa visitor recently.

Lufkin Foundry & Machine Co. announces the appointment of Walter W. Trout as district sales manager of the Mid Continent district, with offices at 908 Mid Continent Building, Tulsa.

V. H. Morganstern, formerly with the Continental Supply Co., has formed the V. H. Morganstern Co., manufacturer's representatives, which has headquarters at Fort Worth, Tex.

The board of directors of the Pennsylvania Engineering Works, New Castle, Pa., announces that Charles Baldwin has resigned as secretary and treasurer to enter another line of business on the Pacific Coast. J. K. Furst has been appointed treasurer, W. S. Wheeler, has been appointed secretary, S. B. Cleal has been appointed assistant secretary.

ASSUMES NEW DUTIES

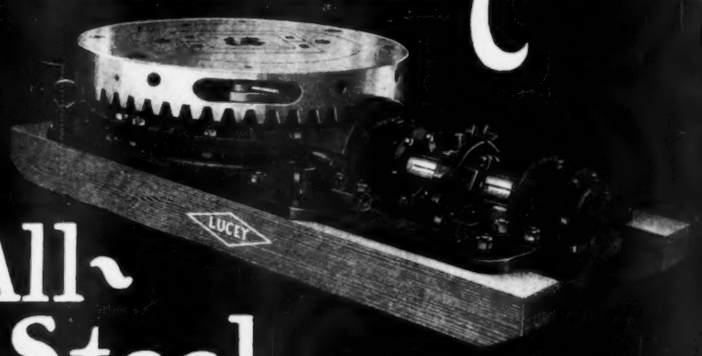
Charles F. Palmer, who was recently appointed manager of sales of the Pittsburgh Steel Products Co., has assumed his new duties at the company's general offices in Pittsburgh, Pa.

Charles F. Palmer

Mr. Palmer for about 20 years was active in sales and executive capacities in the railway supply business. Prior to his connection with the Pittsburgh Steel Products Co., he was conected with the Frank E. Palmer Supply Co. of St. Louis, Mo., in an official capacity and previously was secretary of the J. W. Faessler Manufacturing Co., of Moberly, Mo.

For the past 12 years he has been manager of the Chicago office of the Pittsburgh Steel Products Co., and two years ago was appointed manager of railway sales of the same company in connection with his managership of the Chicago office.

LUCEY



All-Steel Rotary

for Drilling and Making up Pipe

- ¶ Built entirely of steel electrically annealed.
- ¶ Timken Roller Bearing for drive shaft with Alemite Oiling system.
- ¶ Steel Ground Roller Bearings for rotary table.
- ¶ Flat Top Table—No projections to interfere with handling of tools.
- ¶ All Drive Bushings securely locked in place and easy to remove.
- ¶ All moving parts run in a bath of oil—No foreign matter can enter.
- ¶ Ample provision for taking up wear.
- ¶ Constructed of few parts.
- ¶ Simple to change from a drilling machine to a machine for making up pipe.
- ¶ Base is made in one solid piece.
- ¶ Made in 20" and 28" sizes.
- ¶ Full openings through tables 20 inches and 28 inches.
- ¶ Weights complete 7150 pounds and 9150 pounds.

Distributors:
Lucey Manufacturing Corporation of Tennessee:
Mid-Continent General Office and Central Warehouse, Tulsa, Okla., with branches at Tonkawa and Healdton, Okla.

LUCEY MANUFACTURING CORPORATION
CHATTANOOGA, TENN.

Distributors:
T. T. Word Supply Company
Houston, Texas — Shreveport, La.
Bradford Supply Company
Wichita Falls, Texas.
International Supply Co.
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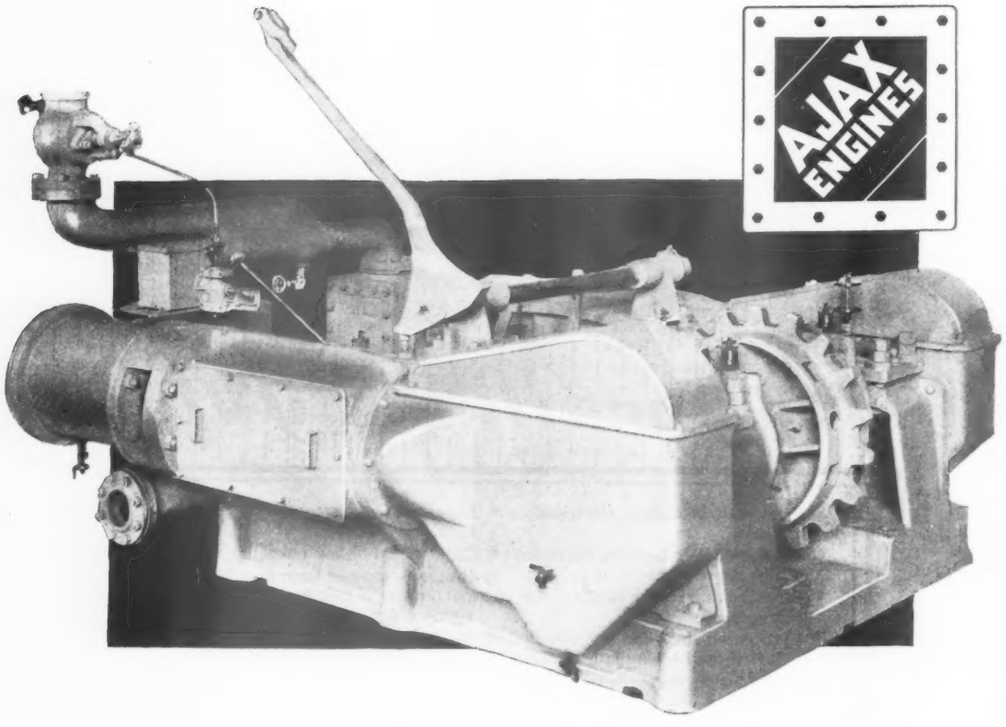
EXPORT DEPARTMENT: WOOLWORTH BUILDING, NEW YORK CITY

The *Enclosed* Crankcase lubricates bearings, crosshead slippers, important wearing parts in a bath of oil. Gives you more dependable power, longer life. Remember it's an *Ajax* improvement.



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Don't Forget The Value of Service

Your Ideal Twin Engine is apt to be a traveller. Who knows how many of the 48 states it may visit? Perhaps it may cross one or all of the seven seas. But to whatever oil field you take it you will find duplicates of its wearing parts marked with the Ajax trademark—that guarantees their genuineness. National Supply Company stores make Ajax Service a world-wide institution.

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THE NATIONAL SUPPLY COMPANIES

In Every Oil Field

34175

DRILLING ENGINES

Natural Gas Developments

Louisiana Stirred Up Over Question of Carbon Black Permit

SHREVEPORT, La., Aug. 20.—Court action may be resorted to in an effort to prevent the Owl Oil Co. from erecting a carbon black plant in the Waskom Gas Field on the Louisiana side if efforts to induce Gov. Henry L. Fuqua and Dr. V. K. Irion, conservation commissioner to revoke the permit fail. This was the opinion of the several leaders in the fight for the revocation of the permit.

Charging unjust attacks on the Owl Oil Co., and that part of the carbon black permit fight is purely for political motives, 78 landowners in the Waskom area and citizens of Greenwood, La., where the plant is to be built, protested in a petition against revocation of the permit. In a page advertisement the 78 signers of the petition sent to Doctor Irion, concluded the preamble of the petition by "welcoming the Owl Oil Co. in our midst."

In the petition, the signers asked Doctor Irion to grant an additional permit if he took any other action. The signers claimed although the field was opened two years ago they have not profited to any degree by the discovery of gas.

Sometime ago Doctor Irion told citizens assembled in a mass meeting at Shreveport he would make a statement concerning the permit after a conference with the governor. Two days ago the conservation chief was in conference with the governor and said after the conference that it was largely personal.

"The carbon black question was not discussed," he said. "I have been spending much time in north Louisiana looking to matters pertaining to fish and fish hatcheries and have not yet looked into the carbon black matter. However, I expect to go into the matter more thoroughly in the near future. The matter is not yet closed."

Newspapers both in the southern and northern part of the State continue their attacks on the administration for issuing the permit and demand revocation of it. Some newspapers used their lead editorials in Sunday issues caustically criticizing administration leaders for issuing the permit. Others editorially attack Doctor Irion and Governor Fuqua for not issuing the statement promised sometime ago concerning the carbon black matter.

CROSSING BIG RIVER WITH 8 10-INCH LINES

SHREVEPORT, La., Aug. 20.—Construction work of the big Monroe-Baton Rouge 22-inch gas line is being rushed to completion before weather conditions would hold up completion of the project. More than 60 miles of the main line of gas line from the Monroe Field has been laid. Preparations are being made now to lay the Mississippi River crossing at Natchez, Miss.

The river will be crossed with eight 10-inch lines laid 50 feet apart. At least two lines through all of the swamps have been completed. Four 12-inch lines will be laid across each swamp and manifolded into the 22-inch line.

The line is being built by Ford, Bacon & Davis, Inc., for the Interstate Natural Gas Co., Inc., primarily to supply the Standard Oil Co.'s Baton Rouge refinery with fuel. All of the steel work is up at the compressing station at Fowler.

Building of the line from the Monroe Field has caused an increase in field work in that area. Four gas wells completed in the field recently with a combined production of 64,000,000 feet of gas.

WILL SUPPLY CITIES IN TEXAS PANHANDLE

Information reaching Amarillo, Tex., stated that the Texas Utility Co. is completing the connecting up of the Whittington gas well in Wheeler County, with its main line to serve cities of northwestern Texas.

The Whittington well when it blew in was considered one of the largest gas wells in the world.

The company will complete its new line from the Panhandle gas field to Quanah within 11 days, it was declared. An adequate supply of natural gas will be available at Quanah and all cities and communities between Quanah and the field at that time. The line will be completed to Vernon about August 20.

Two crews of men are working connecting up the wells with the main line which has been completed to a point 8½ miles northwest of Quanah, where the ditching machines are now working. About 3 miles of line is being laid daily.

RIO GRANDE VALLEY TOWNS WILL HAVE GAS

SAN ANTONIO, Tex., Aug. 20.—Construction of a 12-inch natural gas line from the Webb County fields to Brownsville, which will serve towns in the Rio Grande Valley with domestic and industrial gas, will start within 30 days and be completed within six months.

Announcement of completion of all details of the project was made at the goodwill banquet tendered by the San Antonio Chamber of Commerce to Southern Pacific officials and visitors from the valley, here to celebrate extension of the San Antonio & Aransas Pass from Falfurrias to Hidalgo.

John W. Gaines, San Antonio attorney, who represents a group of financiers headed by P. M. Longin, manager of the Mexican Seaboard Oil Co., made the announcement. He said he had just returned from New York, where details were completed and the contract for the construction work signed.

The gas main will be 160 miles long and the contract calls for installation of individual distributing systems in 14 Rio Grande Valley towns.

PECULIAR SITUATION IN VENTURA AVENUE

LOS ANGELES, Calif., Aug. 14.—The Standard Oil Co., through the Pacific Gasoline Co., which it recently acquired, is starting work on the construction of a new wet gas absorption plant in the Ventura Avenue Field at Ventura, which will give this company a daily capacity of about 90,000,000 feet. The Pacific Gasoline Co. already has two absorption plants in the Ventura Avenue Field which handle about 60,000,000 feet of wet gas a day, and the new plant is designed to handle an additional 30,000,000 feet.

The Pacific's No. 3 plant will be about 1½ miles east of the avenue, and a short distance due north of the Associated Oil Co.'s Lloyd No. 101.

A peculiar situation exists in the wet gas business in the Ventura Avenue Field. The Standard Oil Co., although not owning a barrel of production in the district, finds itself handling probably 60 per cent of the wet gas output of the field, and purchasing this gas from the Tide Water Associated Oil Co., one of its principal competitors in California.

This condition arises through the purchase of the Pacific Gasoline Co. by the Standard. The Pacific Gasoline Co. was a subsidiary of the Pacific Oil Co., merged with the Standard Oil Co. several months ago, which prior to the merger was affiliated with the Associated Oil Co. Under the old condition of things the Associated sold all its wet gas to the Pacific Gasoline Co., and in the course of the various mergers, the Associated finds itself selling its gas to the Standard Oil Co.

Wet gas production in the Ventura Avenue Field exceeds 100,000,000 feet a day, of which the Associated produces about 60,000,000 feet, with the Shell Co. and the General Petroleum Corp. producing the remaining 40,000,000 feet.

SOUTHERN NATURAL CO. BUYS MEDINA COUNTY GAS

SAN ANTONIO, Tex., Aug. 23.—Southern Natural Gas Co. of this city has purchased the gas from the four wells of Henderson & Holden in Medina County on the Adams lease and any other gas that may be developed on the Henderson & Holden lease block. Four-inch pipe has been ordered and it is expected by the end of this week a gas pipeline will be started from the field, 12 miles northwest, to Hondo, the county seat of Medina County.

Western Gas & Fuel Co., a subsidiary of the Southern Gas Co., has been organized and the development is being handled by it. Western Gas & Fuel Co. has started one well on the Chandler tract, a little south of the Henderson & Holden wells, and is drilling at 332 feet, and has made a location for a test on the Adams tract northeast of the Henderson & Holden gas wells on a lease owned by the Western Gas & Fuel Co. and will soon spud in a test there.

Open flow production from the four wells of Henderson & Holden is approximately 55,000,000 feet, total for the four wells. If additional gas is developed in sufficient volume by the wells drilling and others to be drilled it is probable an 8-inch line will be laid to San Antonio, a distance of approximately 40 miles and gas from this field be used as a supplementary supply at times of peak requirement of the Southern Gas Co. in San Antonio.

MARIETTA PROCESS ON COAST

LOS ANGELES, Calif., Aug. 21.—The Marietta Experiment which the Shell Co. and Union Oil Co. are preparing to try out in the Dominguez Field is being held up by the installation of the gas-compression plant which is taking longer to complete than was originally intended. But both the Union and Shell plants should be finished in the next couple of weeks, and then the experiment will be started.

The experiment involves the introduction of dry gas under high pressure into the oil zone which has been exhausted of its flush pressure during the three years it has been producing. The Shell will use its No. 101 Reyes as the medium for introducing the gas, and the Union will apply the gas through its No. 14 Hellman. Both these wells are "five-spot" wells—that is they were drilled in the center of a square on the four corners of which other wells are producing, and were put down for the particular purpose of the test. At present they are on production, the No. 101 Shell-Reyes making 320 bbls. a day and the No. 14 Hellman is making about 175 bbls.

EDMONTON GAS RATES

CHATHAM, Ont., Aug. 14.—The city council of Edmonton, Alta., has authorized application to the Alberta Public Utilities Commission for a 25 cent natural gas rate. Northwestern Utilities, Ltd., will apply for a retention of the present rate.

CLOSING UP THE MERGER OF BIG GAS COMPANIES

The listing statement on 1,500,000 shares of certificates of deposit of Columbia Gas & Electric Co., to be issued in connection the with merger with the Ohio Fuel Corp., states that the time for depositing shares under the merger agreement will expire September 15. After that date, no further deposits will be accepted unless with the approval of the committee, which consists of Philip G. Gossler, president of Columbia Gas Co., and George W. Crawford, head of Ohio Fuel Corp.

The purpose of the certificates of deposit, which are to be issued by the Guaranty Trust Co., are to exchange them for Columbia Gas & Electric common stock turned in under the merger plan.

A new company, probably to be known as the Columbia Gas & Electric Corp., is to be formed to acquire common stock of the two companies. Columbia Gas has 1,500,000 shares of common issued and is to get share for share in the new company. Ohio Fuel has 4,285,218 shares of $25 par stock issued which will get 35-155ths of a share of common and 0.15635 shares of 6 per cent cumulative preferred for each share of Ohio Fuel. Thus, the new company will have issued capital, if all shares of both companies are exchanged, of 670,000 shares of preferred all to go to Ohio Fuel holders, and 3,000,000 shares of common of which Columbia Gas and Ohio Fuel holders will each get 1,500,000 shares. Columbia Gas & Electric Co.'s preferred remains undisturbed under the present plan.

The plan, as stated in the listing application, provides that the new company will start dividends as from November 15, next. Prior to that date the two present companies will continue their present rate of cash dividends. In order to equalize dates of payments, it is expected Ohio Fuel's next payment will be for four months ended November 15 instead of three months. No fractional shares will be issued by the new company but Union Trust Co. of Pittsburgh will arrange to buy fractions to holders entitled to less than half a share and sell to those entitled to more than half a share in order to fill out full shares.

The committee is acting without compensation and its expenses are to be paid by the new company. It has full powers, one of which is to decide when and whether sufficient stock has been deposited to carry out the plan. At least a majority of the stock of each of the two companies must be deposited for exchange to make the merger operative.

CANADIAN NATURAL GAS ASSN.

CHATHAM, Ont., Aug. 14. — The eighth annual convention of the Natural Gas & Petroleum Association of Canada will be held at the Hotel Clifton, Niagara Falls, Ont., on September 2 and 3. The convention will open with registration of delegates and a business session late the first afternoon, when officers will be elected. On Friday morning a sight-seeing trip will take place, the afternoon being given to papers and discussion, with the annual banquet at 6:30.

WAURIKA CO. FORMED

Harry F. Mitchell of Fort Worth, Tex., general manager of the Nocona Gas Co., who with his associates recently acquired a franchise at Waurika, Okla., has incorporated the Waurika Gas Co. It has a capital stock of $450,000, and the other incorporators are Robert Hynes of Waurika and Lee B. Ewing of Weleetka.

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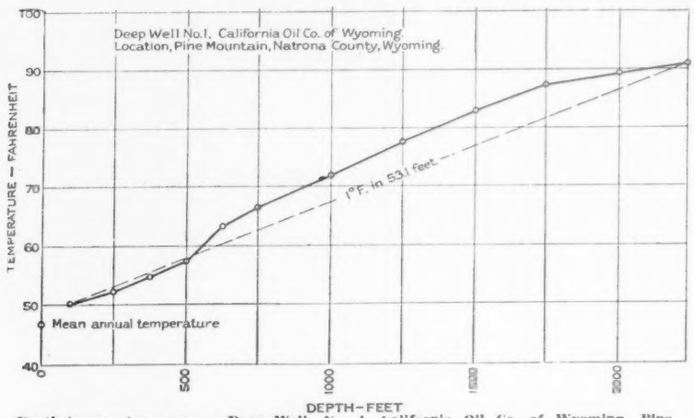
Acme Fishing Tool Co.—Okmulgee, Okla.
Logan Foundry & Machine Co.—Logan, O.
Lloyd, Smith Company—Bradford, Pa.

Interpreting Earth Temperatures

Association of High Temperatures With Crest of Structure Guide in Practical and Theoretical Oil Investigations

By C. E. Van Orstrand*

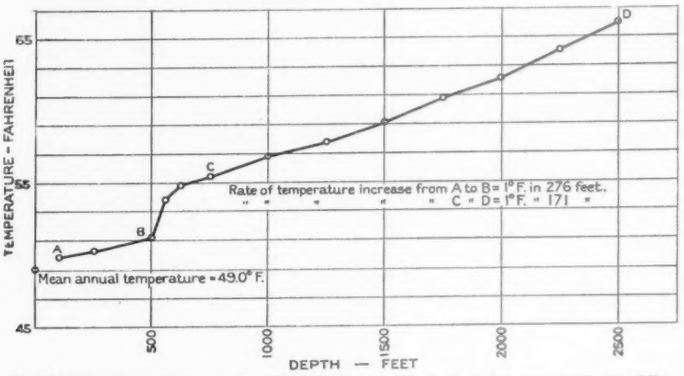
The results of a great number of observations of temperatures in deep wells distributed at various points throughout the United States point quite consistently to the conclusion that the depth-temperature curves in regions underlaid by sedimentary strata extending to great depths approximate in a few cases to straight lines, but the typical curve in thick sediments rises slowly near the surface of the ground and then more rapidly as the depth increases. The typical curve is therefore convex towards the axis of depth


Deep Well No.1, California Oil Co. of Wyoming
Location, Pine Mountain, Natrona County, Wyoming.
TEMPERATURE — FAHRENHEIT
1°F. in 53.1 feet
Mean annual temperature
DEPTH — FEET

Depth-temperature curve. Deep Well, No. 1, California Oil Co. of Wyoming, Pine Mountain, Natrona County, Wyoming.

shown by the curve of the E. M. Day deep well of the Tioga Oil & Gas Co., Gaines Junction, Tioga County, Pennsylvania. So persistently does this type of smooth convex curve prevail in areas of deep sediments that departures from the normal type may be regarded at once as an indication of unusual subsurface conditions.

Attention will be called first to a temperature distribution which is artificial


TEMPERATURE - FAHRENHEIT
Rate of temperature increase from A to B = 1°F. in 276 feet.
" " " " " C " D = 1°F. = 171 "
Mean annual temperature = 49.0° F.
DEPTH — FEET

Depth-temperature curve. A. L. Richards, deep well, south of Furnace Pond, Franklin Furnace, Sussex County, New Jersey.

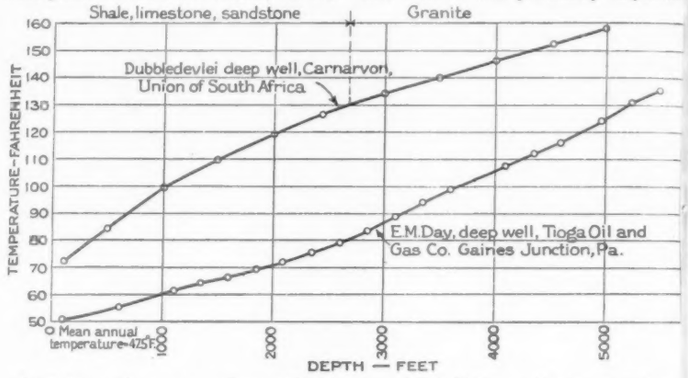
in the sense that the observed temperatures, do not represent true rock temperatures, the abnormal temperatures being produced by a flow of gas into the well at a given level. The marked effect produced by a very small flow of gas is shown on the curve of the E. T. Price well near Mannington, W. Va. The depth-temperature curve is extremely sensitive to even a very small flow of gas from a single thin bed, and it seems not unlikely that a small discharge distributed over a considerable thickness of strata could be detected in this way by a drop in the curve extending over a considerable portion of its length instead of a sharp drop in the curve, practically at a point, as shown in the figure.

Deviations From Curve

Bearing in mind our conclusion that the typical depth-temperature curve in thick sediments is a uniform smooth curve with its concavity upwards with reference to the depth axis—it will be interesting to consider some deviations from the typical curve which are dependent on the conditions of the rocks themselves.

The Pine Mountain curve shows a depression at the beginning and at the end of the curve. As this well was free from gas and furthermore since the depressions in the curve are not characteristic of the depressions produced by a flow of gas at a point, the deviations must be due to exceptional conditions such perhaps as highly fractured zones in the strata.

It will be noted that the curve in the Shumway well near El Dorado, Kans., is a marked exception to the general type of curve in that the trend of the curve is in the reverse direction from that found in the E. M. Day deep well—considered with reference to the depth axis, the curve is concave downwards instead of upwards. This well was filled with oil at the time the test was made, and just before making the test, the well was swabbed, thus introducing a possible element of uncertainty in the results. The curve is of special interest, however, for the reason that sand containing granite was encountered at a depth of 2,675 feet. The results were suspected at the time of observation as indicative of a new type of depth-temperature curve, and it was not until the results of the deep test at Carnarvon, South Africa, were published that any additional evidence was available to justify the conclusion that a new type of depth-temperature curve had been discovered. The Carnarvon well passes through granite and gneiss from a depth of 2,687 feet to the bottom of the well at a depth of 5,080 feet. The observers, Professors L. J. Krige and H. Pirow made very careful observations under the most favorable conditions for obtaining true rock temperatures. In so far therefore as the evidence of a single well is concerned, the depth temperature curve of the Carnarvon well leaves nothing to be desired. Furthermore, theoretical considerations based on the difference in thermal diffusivity of granite as compared with that of sediments leads definitely to the conclusion that the curves are of the correct form. Although all of the evidence available at the present time points to the same results, we are not of course justified in basing a final decision on such a limited number of observations, but it is a reasonable inference, at any rate, that the gradient diminishes as granite is approached and the flattening of the depth-temperature curve with increasing depth may thus serve to give some idea of the thickness of the sediments through which the well is being driven.


Shale, limestone, sandstone
Granite
Dubbledevlei deep well, Carnarvon, Union of South Africa
E.M.Day, deep well, Tioga Oil and Gas Co. Gaines Junction, Pa.
TEMPERATURE-FAHRENHEIT
Mean annual temperature-475F.
DEPTH — FEET

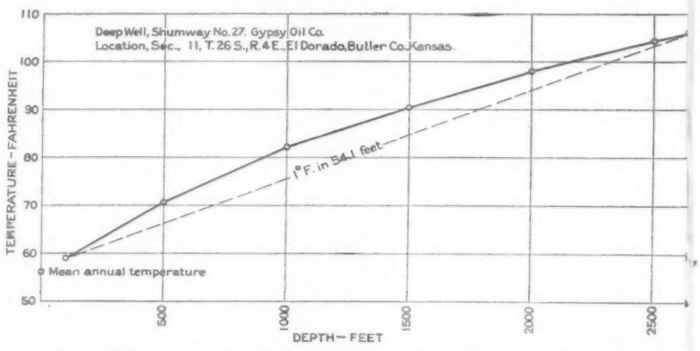
Depth-temperature curves. Deep wells, Carnarvon, South African, and Gaines Junction, Tioga County, Pennsylvania.

Nonsedimentary Areas

Passing now from the exceptional types of curves found in sediments, we come to consider two curves that are more or less representative of the curves that are to be expected in certain nonsedimentary areas.

The A. L. Richards deep well south of Furnace Pond, Franklin Furnace, N. J., is very exceptional in two respects—first, the rates of temperature increase, 1 degrees Fahrenheit in 171 and 276 feet, are extraordinarily low, and second, the abrupt change in the trend of the curve at a depth of 500 feet is quite unusual. For a possible explanation of this unusual result, one naturally reverts to a fault plane, or to the termination at this point of a highly fractured zone in the dolomite, but these inferences are little other than suggestions. A careful study of the temperatures at the time the well was being drilled would probably have thrown considerable light on the subsurface conditions existing at this point.

The depth-temperature curve of the deep well drilled on United States Government land near Burns, Harney County, Oregon, is perhaps the first temperature record ever obtained in a deep lava flow. In testing this well, the usual method of procedure of making observations at intervals of 500 feet was adopted. The curve found in this way was so irregular that it was practically impossible to draw a continuous curve which would correctly represent the observations. At this was my first experience with such irregularities, I naturally suspected that errors had been made in the observations or that the thermometers had failed to record correctly. The duplicate set of observations tabulated just beneath the curve in the figure set aside all doubts as to the accurracy of my observations, and the curve was completed by repeatedly subdividing the interval of observation to 250, 125 feet and so on until a continuous curve was obtained. This method of repeatedly subdividing the interval of ob-


Deep Well, Shumway No. 27. Gypsy Oil Co.
Location, Sec., 11, T. 26 S., R. 4 E., El Dorado, Butler Co. Kansas.
TEMPERATURE - FAHRENHEIT
1°F. in 54.1 feet
Mean annual temperature
DEPTH — FEET

Depth-temperature curve. Deep well, Gypsy Oil Co., Shumway No. 27, Section 11, Township 26s, Range 4e, El Dorado, Butler County, Kansas.

servation provides an excellent check on all of the observations. Two inferences at least may be drawn from the data obtained from this well. First, the depth temperature curves in ancient lava flows are likely to be very erratic—they are a combination of very steep and very flat gradients and they frequently change

(Continued on Page 86)

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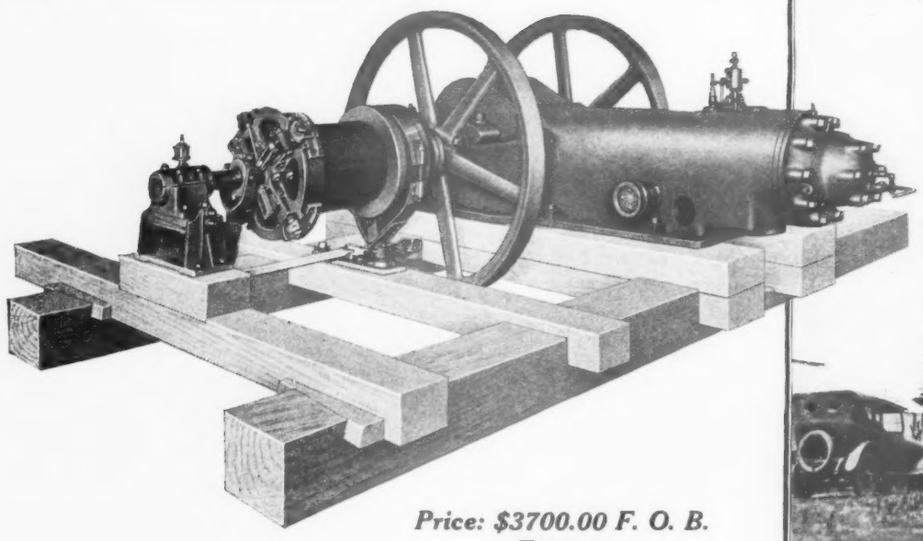

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If you can show a driller or contractor that your power plant will drill more hole at a lower cost and with less trouble, he's "sold." And that's exactly what Franklin Valveless Oil and Gas Engines are doing in the Mid-Continent and Eastern fields, where steam, until recently, was the prime favorite.

But considering the steam engine's dependence upon a good and cheap water supply, the difficulties of transporting so much dead weight and its enormous fuel consumption, it is easy to see why the advantages of Franklin Valveless Engines interested the contractor and operator.

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The Franklin Valveless Oil Engine is a single cylinder, three-part, two-cycle engine, with the fewest possible number of moving parts. All bearings and gears run in a bath of oil, and while fully protected from sand and grit, are easily accessible. The Franklin lubricating system is the most efficient known. An inexperienced crew can set up and operate a Franklin Valveless without trouble or delay.

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FRANKLIN VALVE

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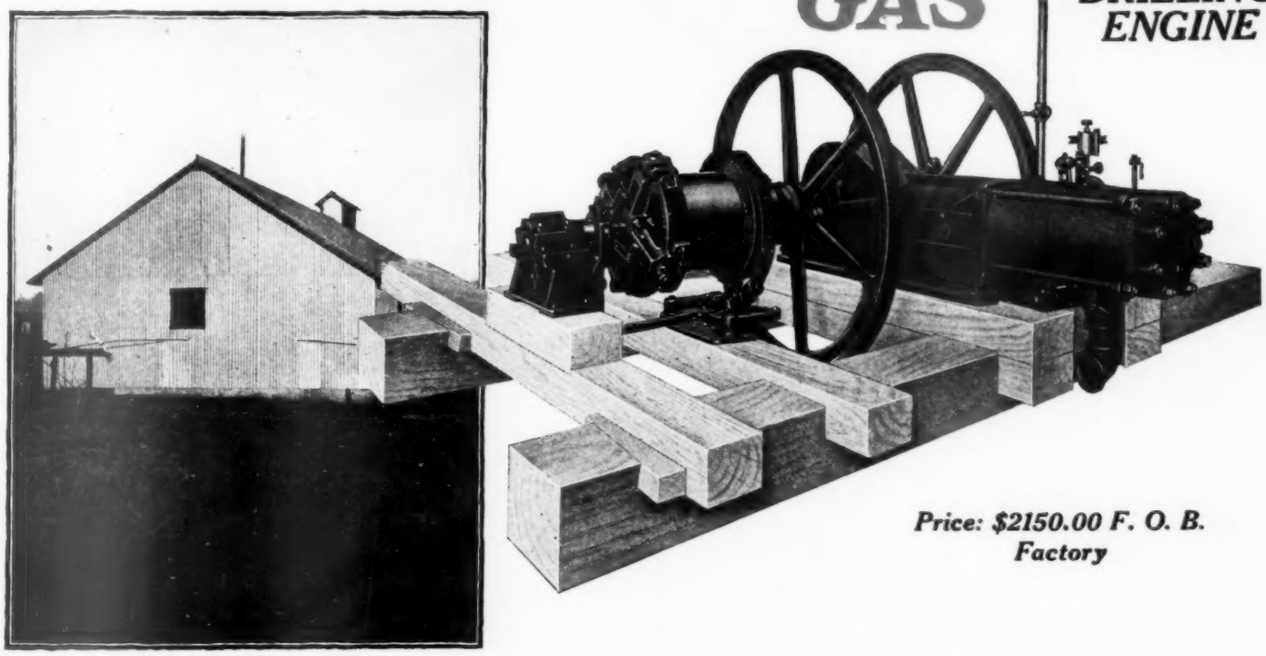

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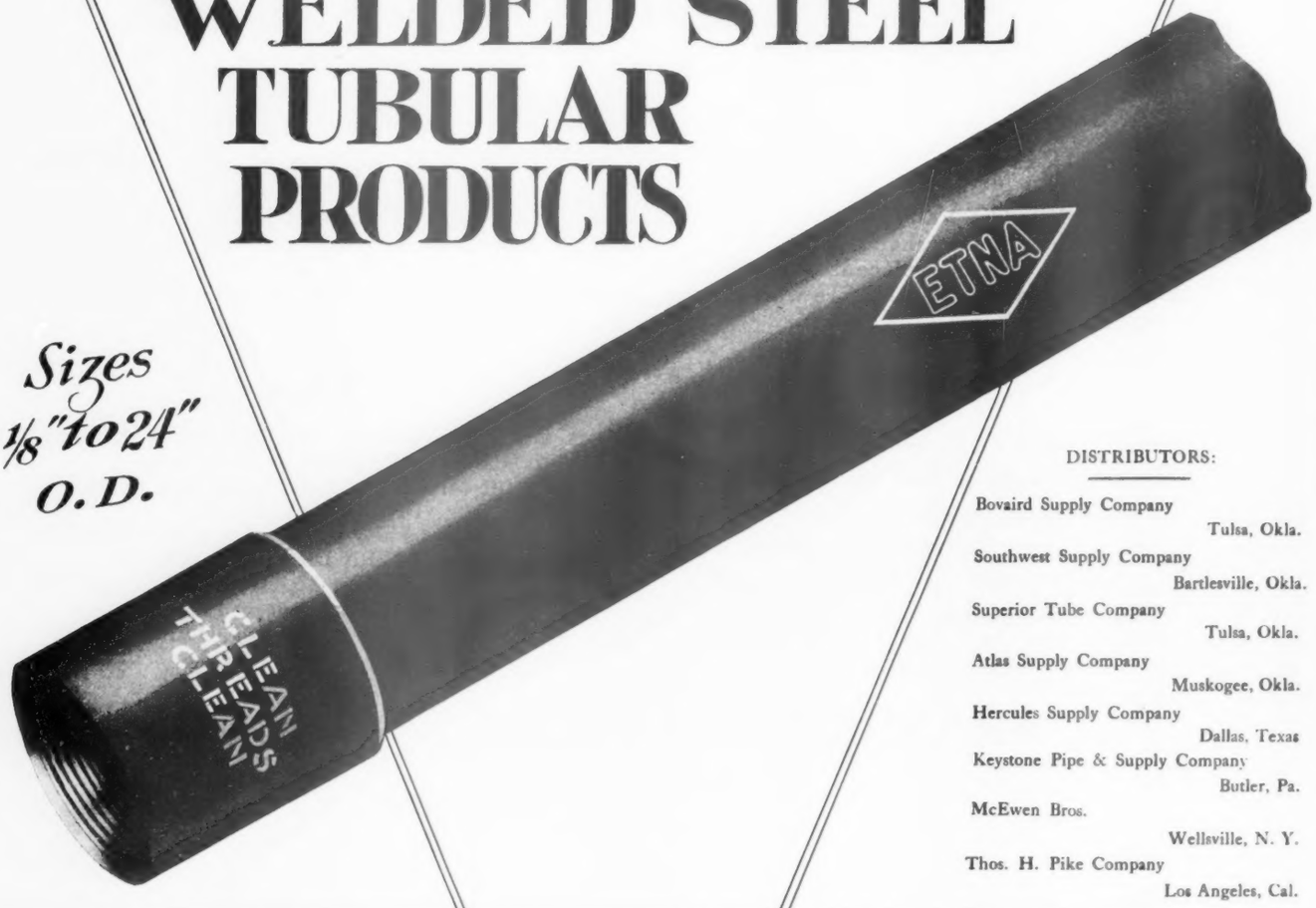

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THE SPINDLE TOP FIELD AND BEAUMONT TEXAS

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Famous Rio Bravo well, Spindle Top, Texas. Crew resting after drilling in 5000 bbl. gusher

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The Industry's Great Progress

By Andrew M. Rowley

While statements have been made many times recently the United States is faced with a famine of petroleum, the fact remains the petroleum industry really is only in its infancy. Developments of this year serve to emphasize this more than ever.

The results of deeper drilling, as epitomized by the Spindletop Pool at Beaumont, on the Gulf Coast, are causing former estimates of reserves of petroleum to be revised upward, while new methods of recovery give promise of further vast stores of crude from fields heretofore believed practically exhausted.

When a field discovered more than 25 years ago can increase its production from about 1,300 barrels a day to more than 80,000 barrels daily within a few weeks, the futility of trying to make any accurate estimate of our reserves of crude oil, based on former methods of drilling and recovery, is apparent.

Improvements made during the past few years in drilling equipment, derricks, machinery and other material necessary in the drilling of wells, which permit holes to be sunk now to more than 1½ miles in depth, must be placed in the category of the important forward steps taken by the petroleum industry and are as vital to the producing branch as cracking processes are to the refining part of the industry.

Deeper drilling at this time features the field operating division of the oil business. Spindletop is but one outstanding example of results being obtained. Other areas have felt the revivifying influence of new gusher production from deeper horizons Beaumont now is enjoying. Even Tulsa, the oil capital of the world, experienced a flurry of excitement several months ago when a well drilled a few miles from the city in an area which had been producing for years from a sand at 2,200 feet, started flowing at the rate of 150 barrels an hour from a horizon discovered at 2,650 feet. Wells in the field had been averaging about 3 barrels daily from the shallower sand.

Californa is an example of what deep drilling has meant to the entire petroleum industry. All remember the completion of E. J. Miley's well there at a depth of 6,791 feet. Also the fact rotary drilled holes have been carried below 7,000 feet. Compare that to the depth of the discovery well of Capt. Anthony J. Lucas, at Spindletop, a little over 25 years ago. The Lucas gusher, regarded as the largest well ever completed in the United States, blew in at a depth of 1,139 feet.

The heads of the production departments of the different oil companies and the manufacturers of drilling equipment, engines, derricks, pipe, and other material, deserve great credit for the vast improvement made during comparatively recent years in methods of drilling and in the equipment used.

The comeback staged by Spindletop emphasizes other features of the oil business deserving of careful consideration not only by persons connected with the business but the general public and all persons in public life and office. When Spindletop was discovered in 1901, thousands of barrels of oil were wasted as the crude was permitted to flow out on the prairie and adequate storage facilities were not available. There were no pipelines serving refineries as at present, small pipelines being laid from the field to railroad loading racks where the crude was placed in tank cars for shipment.

When the deep sand was discovered last November the industry was prepared to care for the crude and additional pipeline connections were constructed so that none of the oil would be wasted or exposed to deterioration in open storage.

Spindletop producers were paid an average of less than 10 cents a barrel for the oil in 1901 and 1902. Much of it brought only 3 cents a barrel. There were no refineries near and the crude was used as fuel oil. Producers in that field now are paid $1.25 a barrel for the crude.

But the point I desire to emphasize and which should be considered by everyone is the fact that in 1901, when crude oil prices all over the United States were low, prices for Pennsylvania crude ranging between $1.05 and $1.30 a barrel and Spindletop averaging less than 10 cents a barrel, the price of the principal product of petroleum at that time—kerosene—averaged 6½ cents for the export trade while the average price of kerosene for all of last year was only 4½ cents in Oklahoma and not over 6½ cents at ports for export in bulk.

The petroleum industry, through its elimination of unnecessary waste, the development of cracking processes in refining, improved methods in drilling, and the ability to obtain the maximum in products from a barrel of crude has kept the price of the products down while the cost of the raw material has advanced. No other industry in the world can point to such a record. Gasoline, the principal product of petroleum at this time, is the cheapest of all commodities and has held that enviable position for years.

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Spindletop Proved Deep Sand Theory

New Producing Horizon Skirts Side of Caprock Pool. Gulf Coast's First Oil Field Has Colorful History.

By P. L. McGreal
Staff Correspondent, Gulf Coast Fields

BEAUMONT, Tex., Aug. 23.—The theory long held in the Coastal region that deep oil sands skirt one or more sides of the original cap rock pools has been substantiated in the case of Spindletop, which was the first of the present 30 producing domes in the Gulf Coast plains, and the eight known and partially defined saline domes. Some half a dozen more have been located since the seismograph and torsional balance methods of locating saline uplifts came into general use.

Behind the deep sand development at Spindletop is the story of 25 years of search with the drill by Coastal operators and the expenditure of millions of dollars before the theory was proven correct. However, Spindletop is not the first pool in which deep sands were discovered. Sour Lake proved the correctness of the theory back in 1913 and Humble in 1914. Batson has produced a little oil from a deep sand north and west of the cap rock area, but the development there is still limited. Humble is the only deep sand district that compares with the present Spindletop activity, either from the point of productivity or drilling campaign.

Sunburst of Beaumont

Spindletop, or "the hill" as it is called locally, is 4 miles south of the Jefferson County courthouse, of which this city is the county seat and about 2 miles from the south city limits. In fact an addition called South Park is in close proximity to the north limits of the deep sand area as at present defined.

The history of Spindletop dates back to about 1890, when Patillo Higgins insisted confidently upon the presence of oil. His convictions were based on two indications. The escape of gas from two points known as the Copperas pond and the Mud Springs, and a distinct topographical elevation of the area above the prairie. Though nothing was known then of domes, Mr. Higgins laid out a section known as Gladys City and in 1892 formed a company known as the Gladys City Oil Co. Later several water wells were drilled to a depth of 15 to 20 feet and salt water containing several minerals was obtained. In addition to other indications, sulphur was found.

The first oil test was made in 1893, when W. B. Sharp and J. S. Cullinan drilled a 418 foot well with a small rotary rig. Hearing that a gas sand had been passed up at 60 feet, Mr. Higgins drilled near by. At about 60 feet he completed a small gasser, which supplied enough gas to fire his boilers. Other tests were drilled at about the same time by Looney and Savage Brothers. In 1900, Capt. Anthony M. Lucas, mining engineer, came to Beaumont. As a result of his experience with salt domes in Louisiana he became convinced that sulphur, oil and gas were to be found at Spindletop.

Backed by Guffey and Galey, Lucas drilled his No. 1 on the apex of the dome and though he lost it at a depth of 575 feet, two demijohns of oil of heavy gravity were obtained. The well, later known as the Lucas gusher, was started in October, 1900, on the southwest slope a short distance from the apex. On January 10, 1901, while drilling at a depth of 1,139 feet, the well blew in unexpectedly with production estimated at 75,000 bbls. It is said to have shot a 6-inch stream of oil 200 feet into the air Although oil had been showing in the pit, no oil was expected then and no preparation had been made to handle it. The well ran wild and flooded the prairie.

After flowing a few days it caught fire and when brought under control the casing was found to have collapsed. The well was never reconditioned. There was a world of drilling. Beaumont was an oil town to which the eyes of the nation turned.

The Lucas well was drilled under contract by the Hamill Brothers, James and Kirk, who are still active Coastal contractors.

Many Got Start There

Some of the biggest men in the petroleum industry today date their entry into the business back to the old Spindletop Pool. Among these are J. S. Cullinan, who became a leader at Spindletop although he had been identified with the original Corsicana Field. Mr. Cullinan organized The Texas Company during the original boom and remained as its president until 1913. W. S. Farish, president of the Humble Oil & Refining Co. and head of the American Petroleum Institute, made his bow as an oil operator at Spindletop, being associated with R. L. Blaffer, now a vice president of the Humble company. H. C. Weiss, another vice president of the same company, looks back to Spindletop. T. J. Donoghue, first vice president of The Texas Company, was present at the birth of his company and advanced to one of its highest executives. E. R. Brown, chairman of the board of directors of the Magnolia Petroleum Co., is another Spindletop producer, as is W. C. Proctor and E. E. Plumly. C. K. Clark, now president of the Standard Oil Co. of Louisiana, came down from Marietta, Ohio, during the early days and remained to advance to prominence. W. P. Gage, who recently resigned as president of the Pure Oil Pipe Line Co. to tour Europe, began his business career at Spindletop.

Small Price for Crude

The old cap rock area never was extended over more than 200 acres including the salt section on top of the dome, or elevation, but the productivity and staying qualities of the cap has been one of the marvels of the oil world. During the first 10 years of its existence the pool produced approximately 41,656,590 bbls. The peak year was in 1902 when the gross output was 17,420,940 bbls. Practically every barrel of the first and second year's output netted the producer

(Continued on Page 76N)

View of new Spindletop Pool, showing wells on the west side of the dome. Looking south and west. To the right, wells of the Yount-Lee Oil Co., Gulf Production Co., Sun and Atlantic Oil Producing Co., on the Gladys, Davis and McLean leases. To the left, wells of the Rio Bravo Oil Co. along the Southern Pacific Railroad right of way in the distance, with Gulf and Yount-Lee Oil Co.'s offsets. Note locations are spaced close, but not as close as they were in the old cap rock district.

SPINDLETOP FIELD AT NIGHT REFLECTS GREAT ACTIVITY

—Photo by Underwood & Underwood.

The discovery of the deeper sand in the original oil field in the Gulf Coast, opened more than 25 years ago, resulted in an increase in production of the field from about 1,300 barrels daily to more than 80,000 barrels daily within a few weeks.

THE LAYNE KEYSTONE WIRE WRAPPED SCREEN

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LONDON, ENGLAND.

Large Plant Capacity in Texas Gulf

Facilities for Manufacturing Petroleum Products Will Readily Absorb Spindletop Output. Rapid Growth in Recent Years.

By Staff Correspondent

BEAUMONT, Tex., Aug. 23.—Unlike many other areas, the producer fortunate enough to have holdings in the new sand development of the Spindletop Field need not be concerned as to a refinery outlet for his crude output. The first Spindletop sand was responsible for the start of the oil business in the Texas Gulf Coast and during the 25 years which have since intervened, the refinery growth has been so great that it is not probable that the production of raw material in this section will ever exceed the manufacturing facilities.

At the present time there is enough excess refinery capacity among the plants of this immediate vicinity and the Houston channel group to more than absorb the 75,000 bbls. flush production of the Spindletop Pool when transportation facilities are adequate to deliver the crude. The Texas Gulf Coast at the present time is the principal refining center of the Southwest and closely follows California and the East Coast, the largest refining centers of the entire industry. In fact considering the relative areas, the Texas Gulf Coast is the largest manufacturer of refined products because both the East Coast and California plants are scattered among several points.

The new Spindletop crude resembles that obtained from the shallow sand except that it is a little higher in gravity. The gravities at the well run as high as 25 degrees A. P. I. The old shallow sand averaged about 18 degrees A. P. I. In the skimming operation no gasoline or kerosene is obtained. However, there is a 25-to-30 per cent yield of gas oil averaging from 25 to 30 per cent. In addition light and medium lubricating oil distillate cuts are obtained, the two averaging about 25 per cent of the charge to stills. At some plants a still heavier lubricating cut is taken from the crude. The bottoms are generally sold as fuel oil.

With the present refinery equipment in this section it will be possible to obtain a substantial yield of gasoline from the crude if desired. This is being done at several plants operating with similar grade crude. The usual procedure in this operation is to skim off the gas oil cut and then charge it to the cracking processes. With this method of operation from 15 to 35 per cent gasoline is obtained without sacrificing the lubricating oil yield.

Lubricating Oil Value

The new Spindletop crude is primarily of value because of the lubricating oil stock which it contains. The Texas Gulf Coast refining area is known the world over for its production of zero cold test oils. Unlike some of the lub oil crudes of the Mid-Continent and other areas no difficulty is experienced in refining Gulf Coast crudes to secure a low cold test product. The pour test of the old Spindletop crude was below 5 degrees Fahrenheit. Practically every grade of lubricating oil is manufactured by the coast refiners with a world-wide distribution. The demand is especially strong during the winter months due to the low cold test of the oils.

The accompanying table and graph tell the story of the growth of the Texas Gulf Coast refining. Previous to the World War there was a steady refinery growth. The refining facilities expanded to handle the production of the coastal fields although a part of the production was transported to eastern refiners.

Pipeline connections to the Mid-Continent fields to the north were largely responsible for the sensational expansion of coastal refining during the past eight years. Major oil interests found that the most economical method of handling their crude supply was to transport it to the Gulf Coast by pipeline, refine it here and then transport it by water to domestic markets along the Atlantic Seaboard and also to the export trade. It also became the manufacturing center for products consumed in the southwestern states, especially lubricating oils, asphalts and other special products.

Rapid Refinery Growth

It will be noted from the chart that at the present based on Government data, the Texas Gulf Coast area is refining approximately 10,000,000 bbls. of crude oil daily. This is approximately three times the average crude throughput of the stills in 1918 and twice as much as the average for 1920. In other words, the refining facilities have doubled during the past five years.

At the present time the refiners in this section are refining practically all of the Gulf Coast production. This production exclusive of the new Spindletop output is approximately 100,000 bbls. daily.

In addition the refiners are handling at the present time about 9,000 bbls. daily of foreign crude. This crude comes from Mexico and the South American fields. This section is well located for the refining of these crudes and it is expected that the amount of this crude brought here will increase as more and more production becomes available. It is interesting to note in this connection that large quantities of California crude have also been brought here for refining. This was especially true during 1923 and 1924 when there was a large overproduction of California crude.

At the present, however, the principal source of crude supply comes from the Mid-Continent area. This crude, as previously explained, is brought here by trunk line connections to the principal fields in Arkansas, North Louisiana, North and Central Texas and Oklahoma. A large part of this crude has a high gravity and this fact has been responsible for the large increase in the gasoline output of the refiners of this area. Before the advent of cracking and when the operations were confined to the handling of coastal crudes, there was practically no gasoline output.

Importance in Refining

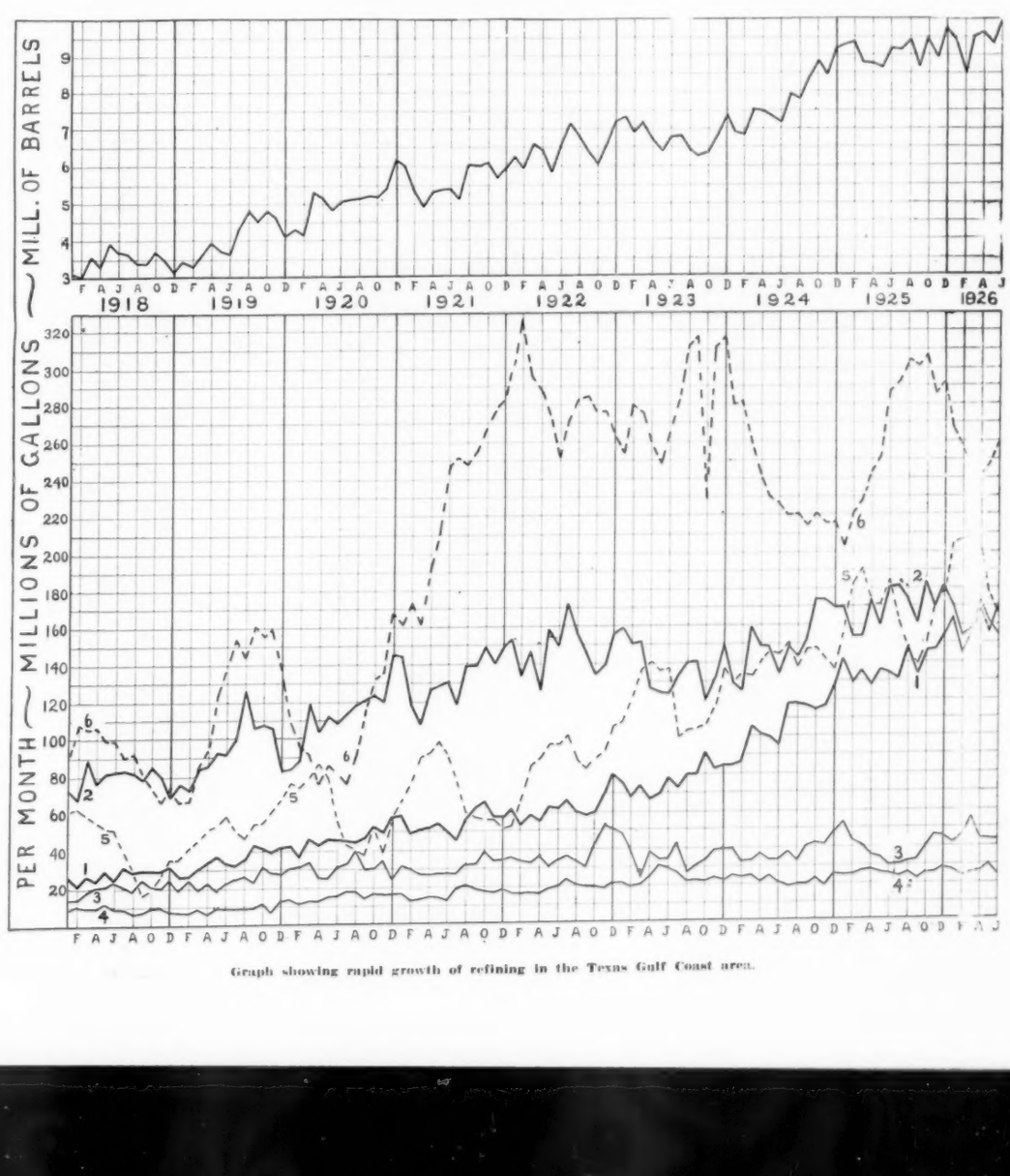
Based on the June report of the Bureau of Mines, the refiners in the Texas Gulf Coast ran a total of 9,975,000 bbls. of crude to their stills, of which 266,000 bbls. was foreign crude and the remain-

(Continued on Page 76-J)

OPERATING REFINERIES IN THE TEXAS GULF COAST

Name of Company and plant location—	Crude Capacity	Cracking Capacity	Type of Cracking Process
Crown Central Petroleum Co., Pasadena	*3,000	2,000	†Holmes-Manley
Deepwater Oil Refineries, Inc., Harrisburg	*2,500	..	
Freeport Asphalt Co., Freeport	**16,000	....	
Galena Signal Oil Co., Galena	10,000	2,000	Burton
Gulf Refining Co., Port Arthur	*110,000	60,000	Gulf-McAfee
Humble Oil & Refining Co., Baytown	*50,000	27,000	Tube & Tank
Keene & Woolf Oil Co., Clinton	*2,000	....	
Magnolia Petroleum Co., Beaumont	*20,000	22,000	Burton-Cross
Magnolia Petroleum Co., Magnetco	16,000	....	
Pure Oil Co., Smiths Bluff	20,000	13,000	Cross
Sinclair Refining Co., Sinco	18,500	20,000	Isom
Terminal Oil & Refining Co., Houston	10,000	1,000	Jenkins
The Texas Company, Port Arthur	*50,000	18,000	Holmes-Manley
The Texas Company, Port Neches	**20,000		
Total	422,000	196,000	

*Manufacture lubricating oils. **Asphalt plants. †Under construction.



Graph showing rapid growth of refining in the Texas Gulf Coast area.

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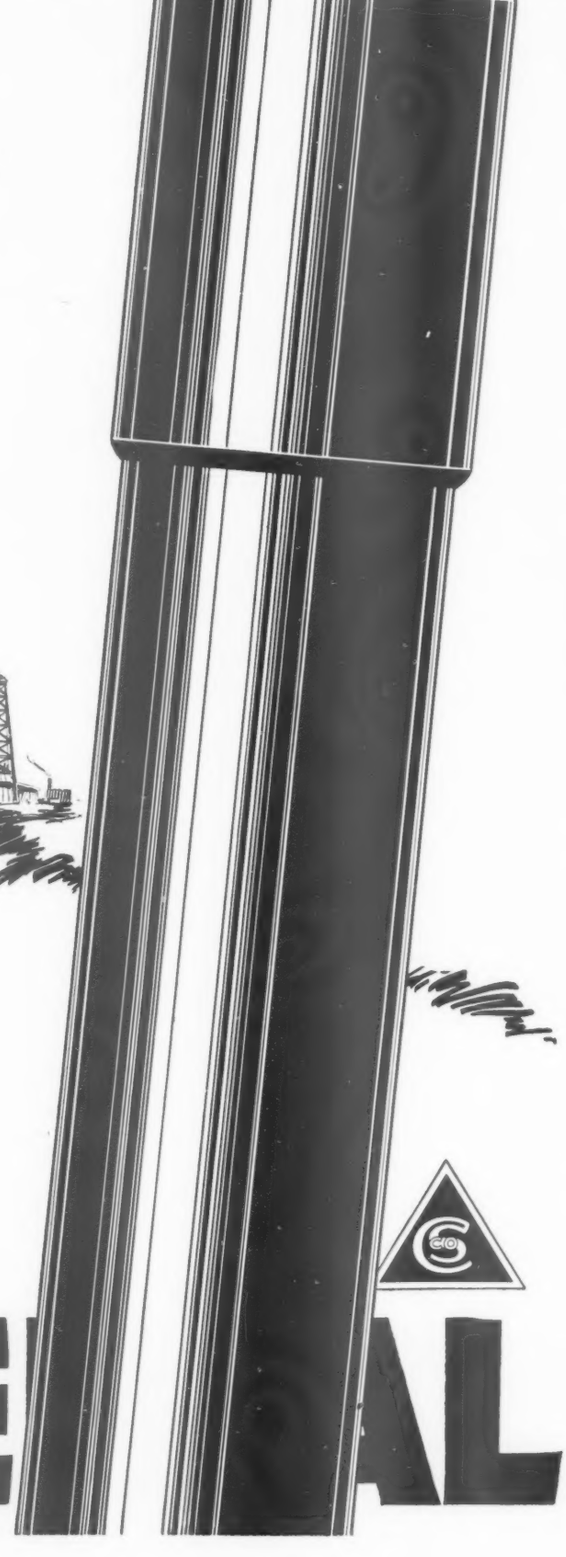
"Youngstown" Pipe is manufactured under conditions assuring every possible advantage in Quality, Quantity and Shipment. It is made from our own steel, specially selected for this purpose from an output of millions of tons per year. Every facility of long experience and research is devoted to its welding, threading and finishing. Back of it is a policy of more than twenty years' standing that requires the most advanced design as well as the most thorough test and inspection at every point. The company has large modern plants in both the Youngstown and Chicago Districts.



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CONTINENTAL

RESIDENTS OF BEAUMONT STYLE IT "THE CITY OF OPPORTUNITY"

By Marvin L. Brown

Beaumont, famed from the day of the discovery of the first "gusher" oil well in America, at Spindletop, has since 1901 enjoyed a steady growth and an enviable reputation as one of the leading industrial centers of the great Gulf Coast region, but just now its prospects of greatness as such a center are brighter than ever before.

The county seat of Jefferson County, with a population of approximately 60,000 and rapidly growing, Beaumont is located in one of the richest oil and refining districts of the Southwest. It has a splendid fresh water harbor, is the center of the yellow pine industry of southeast Texas and southwest Louisiana, and over its municipal wharves and docks go a great portion of the lumber and timber for export to the outside world. Beaumont also is the center of one of the richest rice belts in the nation and has long been famed as the principal rice market of this section. The 30,000 acres of rice in Jefferson County this year will bring farmers an estimated income of approximately $2,000,000. Plans are now well developed looking to making Beaumont a cotton port also.

Big Refinery Center

In this district are located six of the world's largest oil refineries and a large part of the oil produced in the fields of Texas, Arkansas, Oklahoma and Louisiana finds its way here for refining. It is estimated that 25 per cent of the oil and oil products exported from the United States find their outlet to the sea through this district. It is the home of the Pennsylvania Shipyards, the Pennsylvania Car Co. and the Petroleum Iron Works. Over 100 manufacturing concerns in the city proper, exclusive of the refineries, sustain a pay roll of nearly $1,000,000 monthly. The Magnolia refinery is located at the city's gate and maintains a separate wharf and dock system, augmenting the municipally owned wharves and docks. There are four trunk lines of railway entering the city, giving 13 outlets in every direction. The Santa Fe traverses the famous fig belt in the vicinity of Hamshire and Winnie, where the famous Magnolia fig is grown with better results than anywhere else in the world and where the industry is just beginning to reach pretentious proportions. Two large fig packing plants are in operation in the county already and more in prospect.

The soil of Jefferson County is not only especially adapted to rice and figs, but it will produce sweet potatoes in great abundance. Citrus fruits of nearly every kind grow here under proper cultivation. Agriculture is practically in its infancy in this section, but a drainage system costing over $1,000,000 is bringing the section to the forefront as agricultural territory and the people are devoting considerable attention to developing it at this time.

Beaumont is on the Old Spanish Trail leading from New Orleans to California and just recently completed a $359,000 steel and concrete bridge across the Neches River, making travel desirable from all points en route from New Orleans to Houston and on to the great West. A $500,000 bridge across the Sabine River at Orange is under construction now.

Deep Water Channel

The ship channel to the gulf has just been deepened at government expense to a 30-foot depth and materially widened. A further deepening and widening project has received government sanction and soon will be in course of development. The city has just recently completed two new docks and warehouses, bringing the total to six, adequate for an enormous growth in shipping and water transportation. The Waco, Beaumont, Trinity and Sabine Railway is building from Waco to Beaumont, and with its coming, tapping, as it will the great cotton belt of central Texas, will come compresses and additional warehouses and the assurance of a cotton port as well as rice and lumber, which it already handles in enormous quantities. A gin and high-density compress are now under construction, also an enormous warehouse for cotton storage at the wharves and docks. The local Chamber of Commerce promoted the gin and compress, while the City Commision very generously agreed to build the warehouses and all other necessary equipment. It is believed that 50,000 bales of cotton will be shipped from the wharves and docks here this fall. Backers of the enterprise think 1,000,000 bales possible annually within three years.

The city is spending the proceeds of a $750,000 bond issue for street paving, a traffic signal system, etc. There is no such thing as unemployment in Beaumont. It is estimated that the county's pay roll will aggregate $100,000,000 annually.

The recent discovery of oil at Old Spindletop, deeper and in new territory, is attracting the attention of the oil world. More than 2,000 increase in population has been noted here as a result, within the past three months.

The Stone and Webster interests have just completed here a power plant said to be the greatest in the Southwest, the first $5,000,000 unit of a $25,000,000 plant. Beaumont is on the location of the Intracoastal Canal, for the completion of which from Plaquemine, La., to Galveston Bay the government has just allocated $9,000,000 of a total of $16,000,000 for final completion from New Orleans to Corpus Christi. The city and district is in the midst of an enormous expansion program.

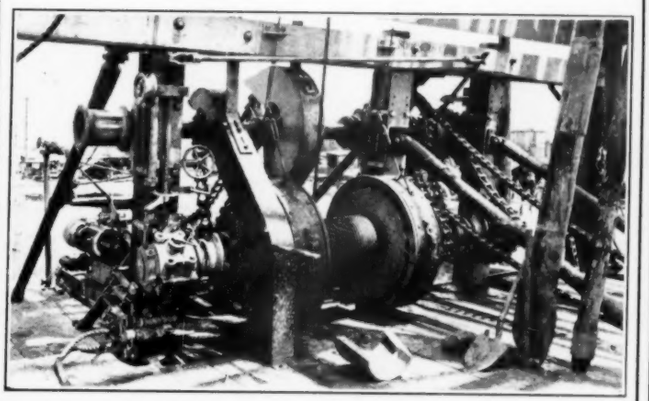
Beaumont is in the mild Gulf Coast climate, noted for its evenness and freedom from extremes of any kind. It enjoys the managerial form of government and has made it a most admirable success. Its school system is claimed to be second to none in Texas and it is the home of the South Park Junior College in addition to its otherwise wonderful public school system. The city offers a tax-free zone to industries and courts investigation as a location for any industrial enterprise, no matter how large or how small. This, with natural gas and an exceptional power concern with cheap industrial rates, makes the location inviting from every standpoint. The city enjoys churches of practically every denomination, has its quota of civic clubs and fraternal orders, a free public library and every other modern convenience.

THE YOUNT-LEE OIL CO. DISCOVERED DEEP SAND

The Yount-Lee Oil Co., which opened the deep-sand section of the Spindletop Pool, was organized eight years ago by F. M. Yount, T. P. Lee and E. F. Woodward. All were practical rotary drillers and operators. Mr. Lee and Mr. Woodward are executives of the Republic Production Co., a J. S. Cullinan interest. Later William Lee and J. H. Phelan, of Beaumont, became connected with the Yount-Lee Oil Co. Mr. Phelan is a wholesale grocer of Beaumont. He is secretary and treasurer of the company. Frank Yount is president and general manager.

The company commenced operations in the Sour Lake Pool and then in the Hull Pool. In addition to its operations at Spindletop the company has and is doing wildcatting around the High Island section, southwest of Beaumont and over in southern Louisiana at Hackberry Island in Cameron Parish. Mr. Yount is conceded to be the discoverer of the Spindletop deep-sand section, the first wells being on the McFadden tract on the southeast side of the caprock section. He is one of the outstanding operators in the Gulf Coast region, the company under his management being successful from its organization.

One of Beaumont's Oldest Supply and Machinery Firms Manufactures a New Draw Works



Here is the first Draw Works manufactured by the Boykin Machinery & Supply Company. It has been set up on Yount-Lee's Fee No. 2 at Spindle Top. It is being extensively manufactured here.

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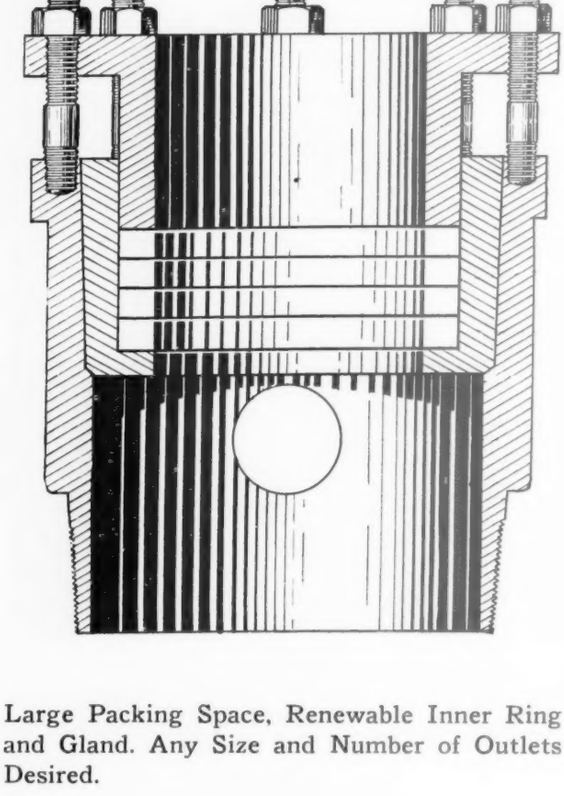

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305 Orange St.

SPINDLETOP LED WAY IN GULF COAST IN ELECTRIFICATION OF OIL FIELDS

Spindletop, an oil field extraordinary for many reasons, can claim the distinction, along with many others, of being the first field in the Gulf Coast territory, and one of the earliest in the country, to experiment with the use of electricity.

Back in 1910 an electric motor was hooked up crudely to a well; a power line was run to the field by the local electric utility, and the "juice" turned on. So satisfactorily did the makeshift prove that electric power has been an important factor in the field ever since, and Spindletop today—both old and new sections—may be said to be 100 per cent electrified.

Expanded Service

This load, coupled with the demand for electric energy in 11 other fields in southeast Texas and southwest Louisiana was primarily responsible for the construction by the group of Stone & Webster, Inc., managed utilities which serve the Gulf Coast district; the Eastern Texas Electric Co., Beaumont; Gulf States Utilities Co., Orange, Tex.; Louisiana Electric Co., Inc., Lake Charles, La., and Western Public Service Co., Liberty, Tex.—of a $3,500,000 unit of a new generating station which ultimately will generate five times the energy of the initial installation. The Neches station was built primarily to serve the oil industry. It goes into service September 1, and will provide ample power for present needs of the territory

That this group of utilities had been outstanding in co-operating with the oil producers and providing facilities to meet their requirements was recognized by the petroleum industry itself at the recent convention of the American Petroleum Institute in Los Angeles The only representative of a light and power utility on the institute program was P. E. McChesney, commercial manager of Eastern Texas Electric Co., Gulf States Utilities Co. and Western Public Service Co., who spoke on "The Attitude of the Electric Light & Power Companies Towards Electrification of the Oil Industry."

In Spindletop today, virtually all companies are using electric power. The largest users, it may be noted, are the largest producers. The Gulf Production Co., for instance, not only is using electricity for lighting and on various pumps, but has two electric drilling rigs in operation. These rigs, according to drillers and company officials, have proved eminently satisfactory from every standpoint, and the power cost for their operation, it is claimed, has been approximately one-third less than cost to drill by other power. The Yount-Lee Oil Co., which has the largest production in the Spindletop Field, also makes wide use of electric power. These, and other companies have proved to their own satisfaction that electricity for pumping does increase production and cuts cost of operation.

Detailed Preparation

The electrification of Spindletop, naturally, was not due to some lucky fluke. It took time, thought, effort and money. Before trying to sell service to the producing companies, their requirements had to be ascertained. Power had to be ample, economical, reliable. When in a position to render service of this caliber, the business was sought and secured. High voltage transmission lines with necessary substations, costing sometimes in the hundreds of thousands of dollars, were built to the fields. A staff of power engineers not only went to work to sell power, but rendered other service, assisting with the specifications for lease of equipment and otherwise making their knowledge and experience available to the producers.

The results have proven highly satisfactory, not only in Spindletop, but in the Orange Field, which is also virtually 100 per cent electrified, South Liberty, Batson, Hull, Saratoga, Evangeline and other fields.

The policy of the company has been to build transmission lines to a new location as soon as it is established as a field, and today it is estimated the investments made by this group of utilities to give adequate electric service to the fields alone, run into the millions.

The oil man, naturally, has not been interested in using electric power just because it is something more or less new. He has had to be shown. Economies possible through the use of electricity, such as saving in labor costs in lease operation, reliability, have had to be demonstrated.

But today, so effectively has it been demonstrated, fields in southeast Texas and southwest Louisiana lead, perhaps, any other territory of similar size in electrification, and Spindletop is distinctive in that it is not only the first gusher field, but the first in the Gulf Coast to turn to electric power and is today completely electrified.

At night it gleams across the flat prairie like a fairyland; derrick lights visible for miles in all directions, and electric motors are silently doing much work formerly accomplished less effectively but more expensively by other means.

Complete electrification of the fields in its territory, the utility officials believe, is but a question of time.

LARGE PLANT CAPACITY IN TEXAS GULF COAST

(Continued from Page 76-G)

der domestic production. This was approximately 15 per cent of all the crude run to stills in the United States during that month.

From this crude a total of 170,343,000 gallons of gasoline were obtained, or 17 per cent of the total supply for that month. From the crude, 42,787,000 gallons of kerosene were obtained. The Texas Gulf Coast is the largest refiner of kerosene in the entire world, furnishing better than 20 per cent of the toal supply in the United States. A total of 154,359,000 gallons of fuel and gas oil was also secured. The lubricating oil production was 24,242,000 gallons and this is also better than 20 per cent of the total supply in the United States. The other products obtained in the June operations included 4,013,000 pounds of wax, 10,284 tons of coke, 23,820 tons of asphalt.

Largest Refinery

It will be noted from the accompanying table that several of the major refineries in the United States are located in this section. The 110,000-bbl. refinery of the Gulf Refining Co. located at Port Arthur is said to be the largest single refinery in the world, furnishing the bulk of all the petroleum products which the Gulf organization distributes in several states extending from Texas to the New England states. This plant is complete, making practically all products obtainable from crude petroleum. In addition to its production in the coastal area, the company has pipeline connections to the Mid-Continent fields.

The Magnolia Petroleum Co., The Texas Company, Sinclair Refining Company, Humble Oil & Refining Co., and the Pure Oil Co. are other major organizations which have large plants in this section. The plants of The Texas Company are the largest of that company as is that of the Humble Oil & Refining Co., located at Baytown.

The total capacity of all these operating plants is 422,000 bbls. daily. With present operations on a basis of approximately 335,000 bbls. daily it is apparent that this section can readily absorb an excess production which becomes available in the coastal fields. The 196,000 bbls. daily cracking capacity is about 20 per cent of the total in the United States.

Spindle Top Electrified the World

—We Electrified Spindle Top....

Spindle Top Oil Field is virtually 100% electrified. Electric power is being used for drilling and pumping, and electricity lights the leases.

The smallest and the largest producers are most enthusiastic about the economy, efficiency and reliability of electric power. They know that electric power cuts production costs and increases production. That's the reason.

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Fabricated Steel Plate Construction

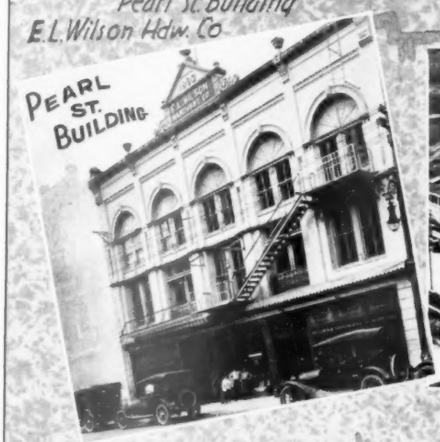
Oil Refinery Equipment a Specialty

IN AND AROUND BEAUMONT

View of Municipal Wharves and Docks, Beaumont.

View of the New Cross Stills just erected at Magnolia Petroleum Co's. refinery

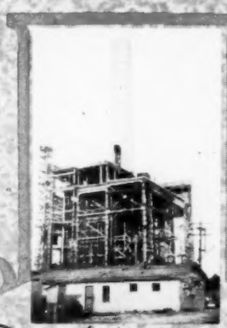
Pearl St. Building
E.L. Wilson Hdw. Co



The Beaumont Iron Works, from the air.

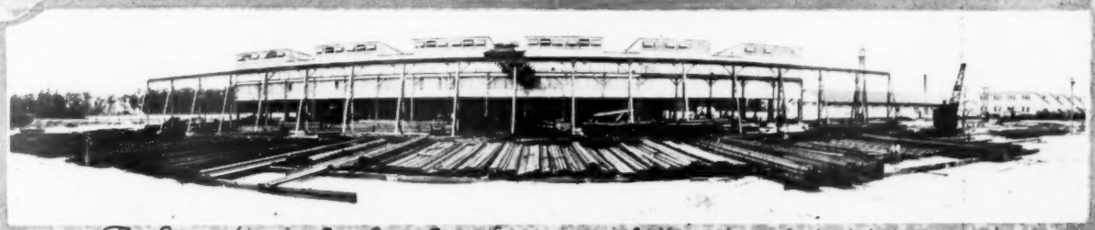
Main entrance, South Texas State Fair.

Interior of Gulf Coast Machinery and Supply Co's. plant



The first $5,000,000.00 unit of the big $25,000,000.00 power plant of the Stone Webster interests, now under construction at Beaumont, Texas.

Boykin Machinery and Supply Co.



The Pennsylvania Car Co. One of a group of three large industries operating here and owned by the J. S. Cullinan interests

SPINDLETOP PROVED DEEP SAND THEORY

(Continued from Page 76E)

less than 10 cents per barrel and much of it was sold around 3 cents per barrel. The oil was low gravity for which there was no demand in those days and a market had to be created by bringing it into competition with coal and wood as fuel. The Texas and Louisiana railroads were among the first of the large corporations to adopt it as a fuel for locomotives, purchasing it on a contract basis for a period of one year or more at a stipulated price. The producer agreed to sell all or a part of his output to the marketers at a certain price, the agreement generally being for one year.

This contract method of buying and marketing Gulf Coast crude became the general practice until the beginning of the World war, when the abnormal demand for both crude and refined oils caused a change to be made and the credit balance system was adopted to conform with the general practice in every other field in the country.

During the second decade of the pool's existence, from 1910 to 1920, the gross production dropped off to 5,414,240 bbls. but prices were higher in conformity. During 1910, 1911, 1912 and 1913, prices ranged from 80 cents to $1.05, gradually advancing until the entrance of the United States into the World War when Gulf Coast crude was posted at $3 per barrel, under orders from Mark Requa and Thomas J. O'Donnell, who acted as Governmental supervisors over the industry. The war figure is the highest ever paid for Gulf Coast crude.

Gross Production

The estimated gross production of the pool to date is 50,176,845 bbls. compiled from the records of The Oil and Gas Journal. The gross for the first seven months of 1926 is placed at 1,614,753 bbls., of which approximately 185,000 bbls. were produced in the old cap rock section on the dome. The present deep sand areas southeast and west of the old pool cover less than 20 acres as developed to date. Therefore, it will be seen that more than 50,000,000 bbls. of oil have been produced from beneath about 220 acres, or an average of 227,000 bbls. per acre and "still going." This is undoubtedly the record for the country.

The following table shows the estimated gross production for each year, including the first seven months of 1926:

Year—	Gross Bbls.
1901	3,593,113
1902	17,420,940
1903	8,600,905
1904	3,433,842
1905	1,600,379
1906	1,075,755
1907	1,613,513
1908	1,747,537
1909	1,388,170
1910	1,182,436
1911	965,929
1912	822,916
1913	716,374
1914	580,130
1915	388,286
1916	340,441
1917	308,029
1918	502,265
1919	464,285
1920	325,575
1921	320,051
1922	294,138
1923	324,795
1924	351,385
1925	*420,823
1926	1,714,753

*Deep sand on southeast side opened November 10, 1925.

Times Have Changed

Spindletop illustrates the changes and improvements that have marked the progress of the oil industry during a quarter of a century. Back in 1901, the rotary was new, it was small and the casing set in the wells was light. Waste was in evidence everywhere, oil being wasted, material wasted, labor wasted—no system—disorder on every hand. The land on "the hill" was cut up into small tracts, measured by feet instead of acres and consequently much wasteful and unnecessary drilling of offset wells. Some of these leases were only 25 feet square and the derrick, boiler and pipe connections projected over on the neighbor's lease. It is said that during the boom of 1902, a man could step from one derrick to another and not touch the ground as he moved over the drilling territory. Fires were numerous, two of them extremely disastrous. Every day men toppled over from inhaling the poisonous sulphur gases coming from the wells. A score died. In the beginning the oil was stored in hastily excavated earthen reservoirs. Later small wooden tanks were used and finally a few 37,500-bbl. iron tanks were erected. The losses from evaporation of crude in the earthen reservoirs was very great. Some of these earthen tanks had a capacity of 500,000 bbls., but most of them held from 100,000 to 200,000 bbls. Two-inch, four-inch and a few six-inch pipelines led from the hill to loading racks along the railroad, the oil being shipped out in tank cars.

Now there is little or no waste of oil or material. Approximately 800 men are employed in the deep sand section as drillers, "roughnecks," firemen and gaugers. Heavy rotaries, heavy casing and heavy drill pipe have replaced the light equipment of 25 years ago. A number of pioneer drillers and contractors who worked in the cap rock district are to be found in the new deep area, having returned with the boom. The promoter and get-rich-quick stock selling men are absent. The Federal raid on this class of financial parasites is too recent to take any chances.

Beaumont is experiencing the benefit of the comeback staged at Spindletop, particularly the hotels and the restaurants. It is estimated that 5,000 people have been added to the population during the past six months.

Pipelines

The pipelines had some difficulty in taking care of the production because it was developed so quickly, but their officials are gradually mastering the situation. The condition that confronted the pipelines will be realized when it is noted that the daily average gross production for the week ending July 3 was 15,750 obls. and for the week ending August 14, it had jumped to 77,000 bbls. One day during that week it was more than 82,900 bbls.

The original lines in the pool at the time of the boom were the Gulf and the Sun companies. The Gulf Co. filled its storage late in July, and the Sun Oil Co. was in about the same position. The Magnolia Pipe Line Co. laid 2,800 feet of 6-inch to its tank farm, south of production and took the Rio Bravo Oil Co.'s output. It is the first time the Magnolia Co. entered the Gulf Coast as a buyer of crude. Early this month the Humble Pipe Line Co. started work on a 45-mile extension of its 8-inch line east from Hull. The Texas Pipe Line Co. is finishing up on 2 miles of 6-inch line to its trunk system east of the pool. The Humble Oil & Refining Co. is buying crude in the pool, transporting it back to Hull into storage by using the 6-inch line of the Sun Oil Co. In about two weeks more the pool will have ample pipeline facilities. Both the Sun and Atlantic Refining Companies are shipping Spindletop crude to their Marcus Hook (Philadelphia) refineries in tankers. Very little of the crude oil is being used for fuel under the boilers at drilling rigs in the deep sand belt. The Magnolia Gas Co. is furnishing natural gas, piped from the fields in northeast Texas and north Louisiana. The Gulf Co. is using electric drilling rigs on the Weed and other leases, securing power from the Eastern Texas Electric Co., a public utility corporation, operating the street railway system here, the electric light plant, the Beaumont-Port Arthur interurban and several other enterprises.

Refineries

So much for the progress noted in drilling operations and pipeline transportation during 25 years. Over across the prairie to the east, some 2 miles distant, is the huge plant of the Magnolia Petroleum Co. and less than 20 miles to the south are the immense refining plants of the Gulf Refining Co. and The Texas Company. These plants owe their erection to the old Spindletop Pool. The Magnolia Co.'s plant is the outgrowth of the old Security Oil Co., which commenced operations in 1902. At present the plant has a capacity of 50,000 bbls. per day, which is being increased 22,000 bbls. by the installation of the Cross cracking process.

The Gulf refinery was built in 1901, and in 1903 had a capacity of 6,000 bbls. per day, employing 300 men. Today its capacity is 105,000 bbls. per day and 5,000 persons are employed. There are 400 stills. A total of 26 steam and motorships carry the products of the refinery to all parts of the world.

The Texas Company's refinery was built in 1902, as a 2,500-bbl. plant. Today some 3,000 persons are employed, the monthly pay roll averaging $458,000. The plant is equipped with 200 crude and re-run stills and 56 batteries of Holmes-Manley high pressure stills. An average of 1,250,000 bbls. of crude per month is handled, turning out 850,000 bbls. of gasoline, 190,000 bbls. of kerosene, 115,000 bbls. of lubricating oil and 500,000 bbls. of fuel oil. The gasoline output increased from 4,500,000 bbls. in 1920 to 10,000,000 bbls. in 1925.

C. C. Blackman, a pioneer refiner from western Pennsylvania and Ohio was the first superintendent of the refinery. He is now retired and lives at Port Arthur.

The refinerymen of those days considered the old Spindletop crude as not refinable and fit only for fuel. Today it is cracked and a fair percentage of gasoline secured, which is a brief way of telling what advances have been made in refining crude in 25 years.

Deep Sand Development

Repeated efforts had been made to find deep sands off the cap rock area on the southeast side of the dome, previous to the success of the Yount-Lee Oil Co. last November. The Gulf Co., The Texas Company, Wilson & Broach, the Rycade Petroleum Co. and some individuals all made the attempt, but failed either being too far out or too close to the salt. The present deep section is 2,000-2,500 feet off the salt. One of the prospects was drilled to 4,100 feet.

The first well came in November 10, 1925, being No. 2 McFadden on the southeast side. Switching over to the west side, two tests went into rock salt and were abandoned on the Gladys City tract. Work was then resumed on the McFadden lease, the drilling being done in a leisurely manner, since no offsets were required. The work followed a semi-circle around the dome. Meantime good wells had been completed on the Gladys on the west side. Several one, 2 and 5-acre tracts had been left open by the Yount-Lee Oil Co. and these were soon leased by the Gulf, Sun, Hines and others, and the Paggi Brothers. The Atlantic Oil Producing Co. entered the pool last month, purchasing the McLean lease with one well on it. An active drilling campaign started about 60 days ago, the companies offsetting each other. The bulk of the work now under way is on the west side. A spur track of the Southern Pacific Railroad and a public highway run north and south through the west side and another highway cuts east and west. The Rio Bravo Oil Co., a subsidiary of the Southern Pacific Railway, has three wells and is drilling three more along the 200-foot wide right of way on which the spur tracks are laid. The Gulf and Yount-Lee Oil companies are offsetting on each side of the track.

The following companies and individuals are operating in the deep sand Spindletop district: Yount-Lee Oil Co., Gulf Production Co., Sun Oil Co., Rio Bravo Oil Co., Atlantic Oil Producing Co., Unity Oil Co., Seven Oil Co., New Beaumont Oil Co., W. C. Turnbow, Favorite Oil Co., Deutser Oil Co., Paggi Brothers, Walker Oil Co., Grayburg Oil Co., Magnolia Petroleum Co., Rish-Pittman Co., Combest and others, L. & L. Oil Co. and Lord-Mothner Co.

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Producers
of

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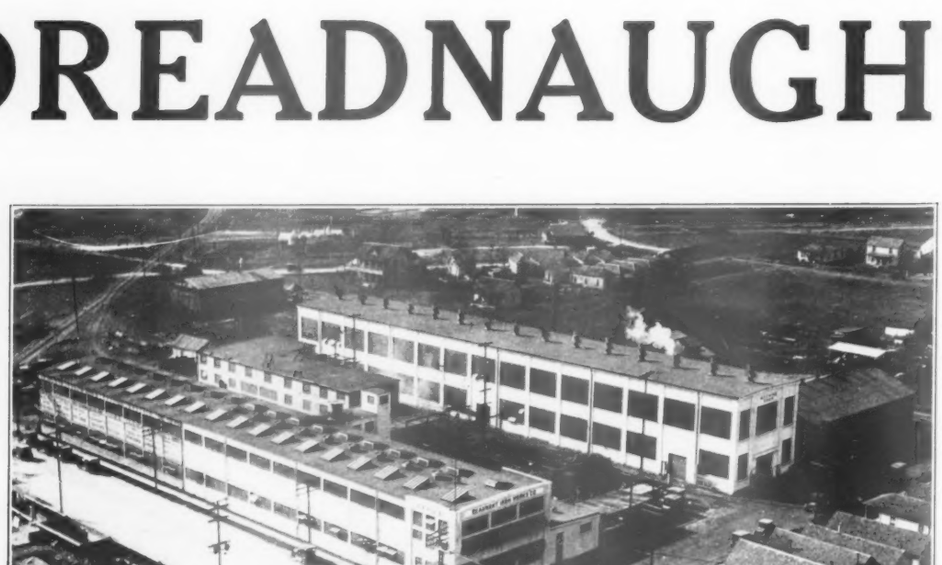

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BEAUMONT, TEXAS, U. S. A.

CANADIAN FIELDS

(Continued from Page 54)

Section 13-20-3w5, is fishing for lost tools at 4,890 feet. Cooper-Nanton Co.'s No. 1, LSD 2, Section 7-20-2w5, is drilling at 3,000 feet with an open hole. The crew will run 10½-inch casing at 3,500 feet if possible. The test has made a new record for the Turner Valley, making 3,000 feet of hole in a month and a half, using heavy standard cable tools with spiral stems.

Other Operations

Great West Oil Co.'s No. 1, southeast quarter of Section 7-20-2w5, is at 3,635 feet and drilling. New Valley Oil Co., LSD 4, Section 6-21-2w4, is at 380 feet and drilling for the 15½-inch casing, and running double tour. Home Oil Co., LSD 10, Section 2-19-2w5, at 1,860 feet stuck a fair showing of green crude and a little gas, the showings being similar to those encountered at corresponding levels in Royalite's No. 4 and McLeod's No. 2. The test is making hole for 12½-inch casing. Stockman's Oil Co., LSD 1-2, Section 27 20 3w5, is at 250 feet and drilling steadily. Surface water was shut off at 120 feet and the 20-inch casing set around 250 feet. This test is in the north end of the Turner Valley Field and apparently the formations are higher, the sand at 120 feet corresponding, it is claimed, to that encountered between 500 and 600 feet in No. 1 Dalhousie.

Dutch-Canadian Oils, LSD 14, Section 4-19-2w5, working on the old Record Oil Co.'s deep well, are cleaning out the mud at the bottom of the casing preparatory to fishing for two strings of fishing tools and a bit lost at 4,327 feet. A third lost string of fishing tools has been taken out.

Henderson Petroleums, LSD 7, Section 27-20-3w5, is reported to have spudded in. Dalhousie Oil Co.'s No. 5, LSD 16, Section 30-19-2w5, is at 1,360 feet and drilling for the 15½-inch casing. Dalhousie's No. 3, LSD 10, Section 13-20-3w5, is cementing casing at 3,345 feet. Dalhousie's No. 1, LSD 4, Section 18-20-2w5 ,is at 3,547 feet and drilling around the lost tools.

Advance Oil Co.'s No. 2, LSD 14, Section 20-19-2w5, is at 1,100 feet and drilling. Big Chief Oil Co., Section 5 20-2w5, is shut down at about 1,200 feet. British Dominion's No. 1, LSD 4, Section 5-20-2w5, is at 1,375 feet and drilling. Calmont Oils, LSD 2, Section 1-20-3w5, is drilling at 1,205 feet. Dallas Oil Co.'s No. 1, LSD 11, Section 20-19-2w5, is drilling at 2,560 feet.

Highland Oils, LSD 5, Section 5-20-2w5, is at 900 feet, and drilling. Midvalley Oil Co., LSD 12, Section 5-20-2w5, is rigging up. New McDougall-Segur Oil Co., LSD 14, Section 12-20-3w5, is at 1,700 feet and drilling. New Black Diamond Oil Co., LSD 1, Section 3-20-3w5, is at 525 feet and drilling. New Valley Oil Co., LSD 4, Section 6-21 2w5, is drilling at 380 feet. Okalta Oils, Ltd., LSD 1, Section 1-20-3w5, is building derrick. Seneca Oils, Ltd., LSD 1, Section 34-20-3w5, has spudded in. Sentinel Oils, Section 8-20-3w5, is drilling.

Dolomite Oils, Ltd., LSD 8, Section 1 20 3w5, is working on derrick with considerable equipment on the ground. Hylo Oils, Ltd., is getting ready to rig up on LSD 13, Section 20-19-2w5, where camp buildings have already been erected. P. H. Grote, representing a Long Beach, Calif., syndicate, is looking over territory with a view to a test. Kevin-Sunburst Holding Co., of Montana, represented by Ira Stanley and Charles Tanner, has secured a 40-acre tract in the Turner Valley Field.

Canada Southern Oil Co.'s No. 1 producing well, LSD 9, Section 1-20-3w5, will be deepened from the present producing depth at 2,436 feet to the Madison limestone. This well was originally drilled about 1917 by the old Prudential Oil Co. and secured a small production. The Prudential went into liquidation, and the property was purchased by W. E. McLeod, of Calgary. The Canada Southern Oil Co. was organized by a closed syndicate consisting of W. E. and E. H. McLeod and Hugh Walsh. Last year the well was cleaned out and drilled slightly deeper, increasing the production to 15 bbls. a day of 56 Baume oil. Standard drilling equipment is now on the ground and the derrick is being strengthened for the deeper drilling. It is planned to carry the 8-inch casing as far as possible. The location is on the legal subdivision south of McLeod's No. 2 naphtha well.

Moose Mountain Field

In the Moose Mountain Field, Cherokee Oils, Ltd., section 33-23-5w5, is at 1,806 feet with a diamond drill test, and running double tour. Production is looked for by the geologists between 1,800 and 2,200 feet. Reserve Oils, Ltd., Morley Indain Reserve, is at 1,683 feet with a diamond drill test, and is thought to be near the top of the Dakota sand. Signal Hill's No. 2, LSD 9, Section 34-23-5w5, is drilling below 600 feet.

R. W. Pilling, of Shelby, Mont., has formed an all-Canadian syndicate which has taken over 4,000 acres held by the Ferdig Oil Co. on the Ferdig structure in the Moose Mountain district, as well as 13,500 acres on the Bar-K ranch near Cardston, in the Border Field. A test will be put down in each of these areas this year. No. 1 test will be drilled on the anticline in the Moose Mountain Field, and results there will determine the location of No. 2 test, in that area. No. 1 on the Bar-K ranch will be spudded in about the same time as No. 1 Moose Mountain. Both wells will probably be drilled by contract, with standard equipment.

In the Lesser Slave Lake district, northern Alberta, International Oils, Ltd., Section 14-74-4w5, at the eastern end of Lesser Slave Lake at 650 feet got a sand with a heavy showing of gas and indications of oil a little lower in the sand. An additional showing of gas was met at 660 feet. At last reports the well had been underreamed and 14-inch casing lowered to 650 feet. It is planned to set the 14-inch casing at 700 feet and carry the 10-inch to about 1,200 to 1,500 feet, the well being carried below the gas horizon for oil. At 660 feet the drill was in a sandstone formation.

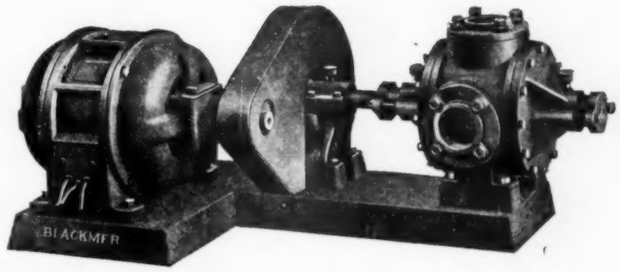
On the Upper Peace River, Black Rock Petroleum's No. 1, near Vermillion Chutes, is reported at 229 feet depth and drilling in the limestone.

In the tar sand district near Fort McMurray, the Bituminous Sands Extraction Co. of Calgary is continuing tests with the Absher process, under the direction of A. O. Absher, the inventor. A well has been sunk 375 feet, through 185 feet of overburden and 190 feet of tar sand, and steam is forced down the 4½-inch perforated pipe, releasing the oil and driving it up through the 1¼-inch inner pipe. On a three-day test the well is reported to have produced 10 bbls. a day, with a boiler making 115 pounds pressure, and with a larger boiler and heavier pressure it may make more crude. It is planned to refine the crude on the ground, shipping the lighter products and using the residuals for fuel for drilling and operating the wells.

Wainwright Field

In the Wainwright Field, Western Consolidated Oil Co.'s No. 2, Section 30-45-6w4, got the oil sand at 2,219 feet. Ten feet of coring was done, and is reported to have shown the greatest saturation of any sand yet drilled in the Wainwright Field. The casing has been cemented, and as soon as the cement sets the well will be drilled into the sand. The structure at this point shows a 20-foot rise compared with the Edmonton Wainwright's No. 1. It is stated the oil tests around 22 Baume. As soon as No. 2 is finished, Western Consolidated's No. 1, LSD 8, Section 20-45-6w4, which has been standing at 1,450 feet, will be finished. Edmonton-Wainwright Oils' No. 1, LSD 4, Section 29-45-6w4, is reported pumping at intervals and making at the rate of 290 bbls. a day, with an estimated available production of between 1,000,000 and 2,000,000 feet of gas.

Emerald Oils, LSD 8, Section 30-45-



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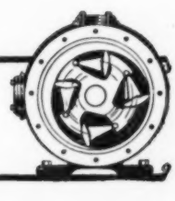

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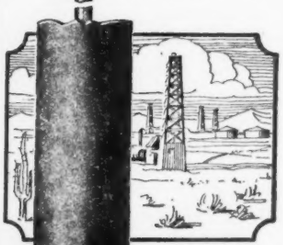

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Our new catalogue No. 30 describes The Larkin Line. May we send you a copy?

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6w4, which got oil showings but failed to develop commercial production at 2,100 feet, will likely be drilled deeper. The test at 2,100 feet apparently failed to reach the deeper oil sand encountered in other Wainwright producers and which is expected in approximately 100 feet more of drilling.

Fabyan Petroleums, Ltd., LSD 8, Section 24-45-8w4, is drilling below 200 feet with a rotary test. British-Wainwright Oils, LSD 13, Section 20-45-6w4, is rigged up with a rotary outfit, ready to spud in. Anglo-Alberta Oil Co., LSD 16, Section 19-45-6w4, has machinery on the ground. Ribstone-Wainwright Oil Co., of Calgary, has arranged with the Western Consolidated Oil Co. for a test on the latter's leases in LSD 13, Section 14-45-6w4. Mewasin Oils, Ltd., LSD 7, Section 30-45 6w4, is waiting for casing to spud in. It is reported that Mill City Oil Co. has made a tentative location in Section 24-45-7w4, a half mile northeast of Western Consolidated's No. 2.

On the Ribstone-Blackfoot anticline, Advance Oil Co.'s No. 3, LSD 1, Section 16-45-1w4, is reported rigged up ready to spud in. Ribstone Oils, LSD 1, Section 1-46-1w4, is reported to have spudded in. Imperial Oil-Ribstone No. 1, Section 5-45-1w4, is rigging up. A. J. McLay, of the Oil Producers Corp., who is working on two contract wells for the company in Montana, is arranging to ship a rig to the Ribstone Field for a test as soon as one of his Montana wells is finished. E. P. Rowe and associates of Toronto have secured Hudson's Bay Co. leases covering 400 acres on the Ribstone structure, and will put down a test by contract, using a rotary outfit. The same interests have secured acreage in the Jumping Pound district west of Calgary and will undertake a deep test there with a standard outfit.

Jumping Pound District

In the Jumping Pound district, Imperial Oil-Bow River's No. 1, LSD 15, Section 12-25-5w5, is at 3,396 feet and cementing casing. In the Highwood district, Imperial-Highwood's No. 1, LSD 3, Section 36-18-3w5, is reported to have spudded in. In the Rice Creek area west of Nanton, Imperial Rice Creek, Section 4-14-2w5, is at 4,602 feet and drilling.

In the Border fields, Imperial Oil-Burdett No. 1, Section 8-11-11w4, is drilling below 1,020 feet. Imperial-Erickson No. 1, LSD 13, Section 8-1-12w4, is at 2,372 feet and cleaning out the hole preparatory to going deeper. South of Skiff, Devenish Petroleums, LSD 5, Section 27-5-14w4, is at 400 feet and drilling. On the Quarantine Reserve near Coutts, Urban Oils, Ltd., Section 4-1-15w4, is rebuilding the derrick recently burned down, preparatory to resuming drilling at 3,042 feet.

Montana Fields

In the Montana Fields, Cascade Oils, Ltd., Section 11-34-1w, is at 1,270 feet and drilling. Cope Development Co.'s No. 2, Section 35-35-2w, is drilling, and No. 3, Section 28-35-2w, is rigging up. Queen City-Hanna's No. 1, Section 18-34-1w, is at 750 feet and drilling. Red Deer-Suhburst's No. 7 is drilling a test in Section 29-35-1w. Rose-Altamont's test, Section 27-35-23e, is drilling around 500 feet, after getting a fair show of gas at about 400 feet. Rose's No. 15, Section 31-35-1w, is spudding in. Security Oil Co. of Calgary has arranged with the Rice Oil Co. for tests on the former's 80-acre lease in Montana, in Section 30-35-1w. Great West Oil Co.'s No. 5, deepened to 1,494 feet, looks like a 50-bbl. well. No. 4 is reported good for 62 bbls. and No. 3 for 25 to 30 bbls. No. 3 may be shot; and No. 6 will likely be drilled before the wells are put on the pump.

B. F. Hake and H. Bryant, of the Marland Hudson's Bay Oil Co.'s geological staff, are carrying on survey work in the Peace River district. Other members of the Marland staff are working in the Turner Valley and Wainwright Fields.

In the Ontario fields, the Dominion Natural Gas Co. has started a test for gas in the north half of Lot 22, Concession 3, south Talbot Road, in Middleton Township, Norfolk County. The Dominion is drilling below 100 feet on another test on Lot 30, Concession 4, south Talbot Road, in the same township. In Dawn Township, Lambton County, Union Natural Gas Co.'s No. 12 is drilling.

ARTESIA, NEW MEXICO

(Continued from Page 50)

have started the drilling of their No. 4 in the same section. Flynn, Welch & Yates have completed a good producer in their No. 49 which was shot from 2,000 to 2,028 feet.

West of Pecos, close to the old Brown well that started the oil activity in this valley 20 years ago, a showing of both oil and gas was picked up in Rehn and others' No. 1 Winans, located in Section 15-18-26, from 1,550 to 1,600.

Eddy County Drilling

Compton's No. 2 Mann permit, Section 3-18-27, shut down at 2,060 feet; Cook-Ironside's No. 1, Section 10-20-29, drilling at 1,800 feet; Decum Development Co.'s No. 1 Vandagriff permit, Section 5-17-28, casing set, bailing off water; Flynn-Welch-Yates' No. 49, Section 3-18-28, cleaning out after shot; No. 3 Dunn permit, Section 10-18-28, fishing at 600 feet; No. 50, Section 28-18-28, drilling at 1,200 feet; Rehn and others' No. 1 Winans, Section 15-18-26, drilling at 1,750 feet; Hamilton Petroleum Co.'s No. 1 Billings, Section 12-19-26, drilling below 900 feet; Hasenfuss & Donley's No. 2 Keyes, Section 13-18-28, drilling deeper, depth 2,400 feet; Henderson-Dexter-Blair's No. 1, Section 9-19-28, drilling at 1,550 feet; Levers-Carper's No. 3, Section 3-18-28, on production; No. 4, same section, rigging up; Ohio Oil Co.'s No. 2 New States, Section 8-18-28, preparing to shoot; Phillips & Welch's No. 1, Section 35-18-28, drilling in hard lime at 2,450 feet; Swartz-Compton-Eaton's No. 1 Brainard permit, Section 5-18-27, shut down at 2,002 feet; Sun Oil Co.'s No. 1 Section 21-25-30, set 10-inch, drilling at 1,350 feet; Skelly Oil Co.'s No. 1 Lynch permit, Section 22-17-31, drilling at 3,030 feet; Bruce Sullivan's No. 1, Section 1-18-31, drilling at 1,200 feet; Twin Lakes Oil Co.'s No. 8, Section 28-18-28, on production; Merriweather and others' No. 1 Goodale, Section 19-18-29, drilling below 2,350 feet; Wooley-Jones' No. 1 Beeson, Section 33-17-30, drilling at 3,150 feet; Pueblo Oil Co.'s No. 1, Section 33-17-28, drilling at 600 feet.

Lea County

Caprock Oil & Gas Corp.'s No. 1, Section 11-16-32, waiting for rotary rig; J. S. Covert's No. 1, Section 15-21-33, drilling at 1,600 feet; Inglefield and others' No. 1, Section 4-17-34, reaming to set pipe at 1,000 feet; Maljamar Oil & Gas Corp.'s No. 1 Baish, on production; Ohio Oil Co.'s No. 1 William Mitchell permit, Section 18-17-32, spudded; No. 1 Pearl Miller permit, Section 35-17-32, ready to spud; T. P. McDonald's No. 1, Section 22-18-34, drilling.

GULF COAST FIELDS

(Continued from Page 70)

Taylor on the east flank of the dome is drilling below 2,875 feet.

Over at Blue Ridge, about 5 miles across the prairie, southwest from Pierce Junction, the Gulf Production Co.'s No. 6 West-Schenck on the south flank of the dome, is drilling around 3,100 feet. J. S. Abercrombie Oil Co.'s No. 1 West-Schenck completed last month is pumping 700 bbls. The well flowed 150,000 bbls. before the pressure eased off. The Gulf Production Co. is preparing to deepen No. 10-C Blakely and has a location for No. 9 Luscher on the east flank.

In the Goose Creek Pool, the Gulf Co.'s No. 10 State land in the bay is sidetracking around 2,090 feet. No. 34 Beaumont is drilling at 3,555 feet and No. 6 Hirsch is around 4,600 feet. The latter two are also on submerged land in the bay. On the Galliard peninsula, the Humble Oil & Refining Co. is drilling No. 10 around 3,600 feet and No. 12 at 3,598 feet. No. 9 is deepening, with derricks up for Nos. 17 and 31. The Southern Exploration Co.'s No. 7 Free-

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Compressed Gas and Air for increasing the oil production from wells is receiving considerable publicity.

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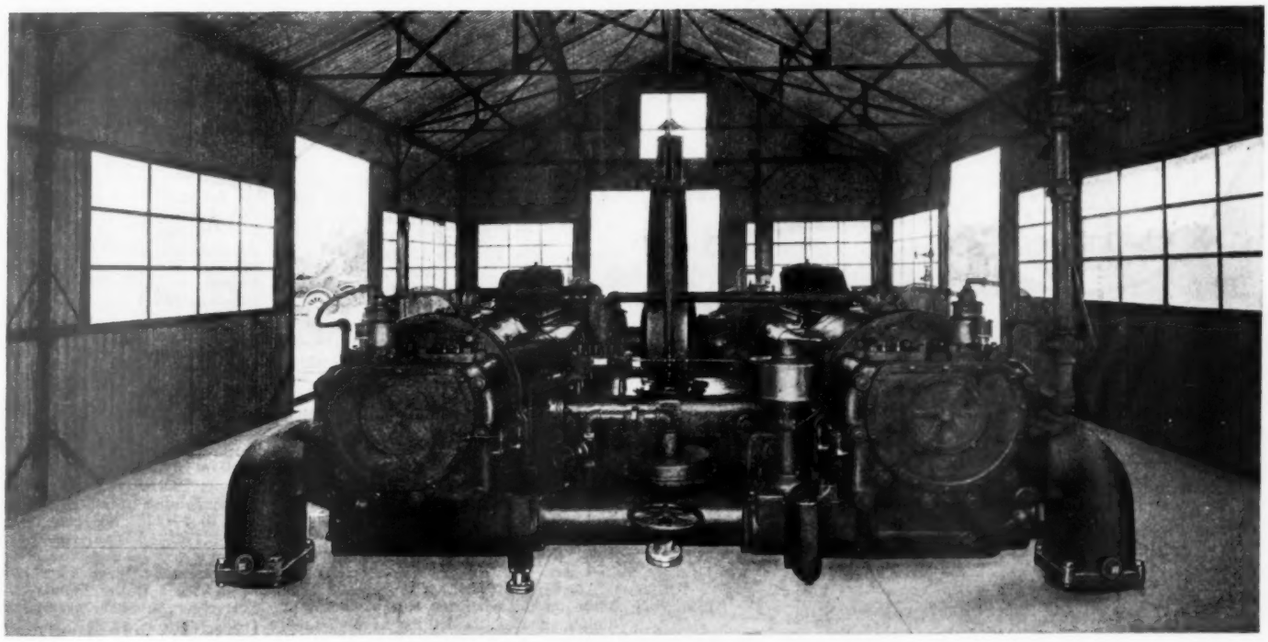
These units had to be built so that they would run along safely without attention by operator for long periods.

The plant shown is one of many that is visited by the pumper once or twice every twenty-four hours.



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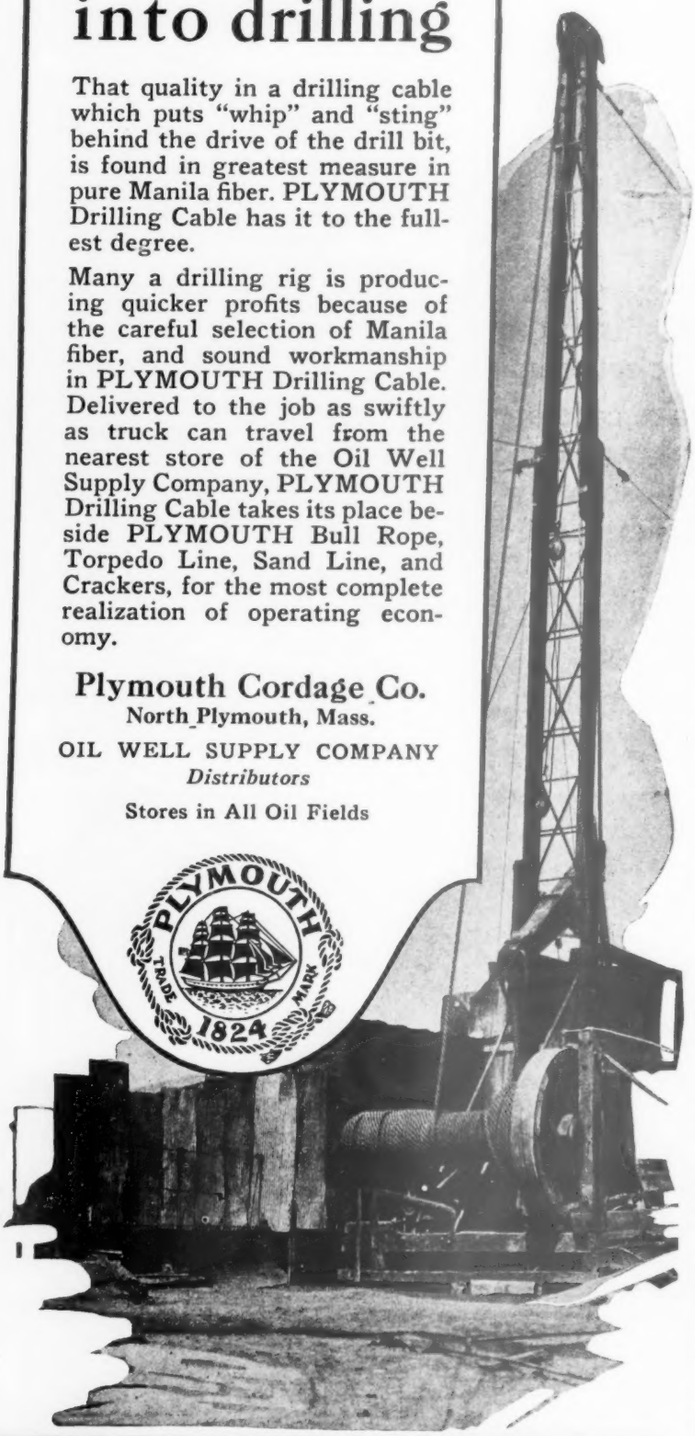

PLYMOUTH
OIL WELL CORDAGE

man in the bay is bailing at 2,800 feet, after being worked over. The Gulf Coast Oil Corp. will deepen No. 9 Galliard from 2,650 feet.

Hardin County Pools

On the southwest side of the Sour Lake Pool, the Humphrey Corp.'s No. 2 and 3-B Bashara were spudded in Thursday. The Orange Petroleum Co.'s No. 1 Merchant is drilling around 4,455 feet and the Sun Co.'s No. 1 Libbie is fishing at 4,800 feet. The Gulf Production Co.'s No. 1 McLean is around 2,976 feet and a location made for No. 1 Cora Lee Jackson. J. F. Bashare's No. 1 fee is at 3,565 feet with a location made for No. 2 fee. Gordon and others' No. 1 Schaffers is around 4,000 feet. Eunice and others' No. 1 fee is at 3,465 feet. The southwest side is a deep sand section. The Humble Oil & Refining Co. is preparing to drill No. 34 West on the north side deeper.

In the Batson Pool, the Gulf Production Co.'s No. 1 Cruse is around 1,985 feet, with a location made for No. 63 Choate. The Buchanan Oil Co.'s No. 90 Milhome is at 875 feet. The Houston Production Co.'s No. 1 Santa Fe is shut down at 3,100 feet. The Texas Company's No. 2 La Jarza, a proposed deep test on the east side of the pool is drilling around 2,235 feet.

Liberty County Pools

The Humble Oil & Refining Co.'s No. 3 Welder in the west extension across the Trinity River, is drilling around 1,235 feet. A location was made for No. 4 Welder. In the old part of the district, the Peer Oil Co.'s No. 1 Harrison is sidetracking at 3,305 feet. The Coastal Oil Co.'s No. 1 LeCour is idle at 2,750 feet. The Gulf Production Co.'s No. 1 Backman, is rigging to start.

In the Hull Pool on the east side, the Republic Production-Houston Oil Co.'s joint No. 126 Dolbear will be drilled deeper. No. 137 is drilling at 1,565 feet. No. 136 Dolbear is a location. The Gulf Production Co.'s No. 71 Phoenix on the southeast flank, is drilling around 3,465 feet and No. 72 is at 1,875 feet. No. 19 Hannah fee on the west is around 4,610 feet and No. 18 Scarborough on the north is around 3,875 feet. The Texas Company's No. 1 Armlein is at 455 feet. The Empire Gas & Fuel Co.'s No. 20 Barngrover is around 2,565 feet and No. 21 is drilling at 2,970 feet. The Humble Oil & Refining Co.'s No. 1 Bevers is drilling around 4,350 feet. No. 1 Lynd will be deepened. Locations have been made for Nos. 2 Lynd and 5 Merchant. The Peer Oil Co.'s No. 4 Harrison is fishing at 2,800 feet.

Orange Pool

In the Orange Pool the Gulf Production Co.'s No. 1 McGuire is around 2,900 feet drilling deeper and the Kishi Development Co.'s No. 6 McGuire will be drilled deeper. The Brownie Babbittee Oil Co. is deepening No. 3 McLean at 2,610 feet. The Humble Oil & Refining Co.'s No. 4 Winifree is at 3,715 feet and No. 27-B Chesson is around 3,355 feet. The Rex Petroleum Co.'s Carbello is at 3,990 feet. The Texhoma Oil Co.'s No. 9 Chesson is sidetracking at 3,465 feet and No. 16 Chesson will be deepened. The Peer Oil Co.'s No. 1 Mecom is drilling around 3,455 feet.

Other Pools

At High Island, Galveston County, the Gulf Co.'s No. 5 Smith, between the dome and the Gulf of Mexico, is around 4,900 feet. The Sun Co.'s No. 8-C Cade is around 4,435 feet. No. 11 Cade is a location. No. 9 Lockhart is shut down at 250 feet.

The Hyde Production Co.'s No. 2 Masteron on the northeast side of the West Columbia Pool, is drilling around 1,000 feet.

South Louisiana Pools

The Rex Petroleum Co.'s No. 3 Hunter at Edgerly, is drilling 3,650 feet; Drysdale-Savoy Oil Co.'s No. 2 Hill, will pump at 2,750 feet; C. M. Crotty Oil Co.'s No. 14 Lilliard, drilling 1,350 feet; Edwards Oil Co.'s No. 4 Landry, will deepen.

The Vacuum-Gulf's No. 8 Miller at Lockport, set casing 4,300 feet; No. 10, drilling 4,900 feet; No. 1 Farquahar, drilling 3,000 feet; No. 4 Lock-Moore, drilling 5,700 feet; No. 3 Bordages, set casing 3,750 feet; No. 1 Bayou D'Inde, drilling 1,000 feet; No. 2 location.

The Vinton Petroleum Co.'s at Vinton No. 27 Rescue, is a location; No. 56 Gray, drilling 1,500 feet. The Edgerly Petroleum Co.'s No. 10 Vincent, drilling 3,400 feet; No. 11, drilling 2,500 feet. The Texas Company's No. 2 Gray "C" drilling 2,850 feet; No. 17 Vincent, location. The Gulf Refining Co.'s No. 42 Vincent, drilling 3,850 feet; No. 2 F. H. Gray "A" drilling 2,300 feet; No. 5 drilling 1,800 feet; No. 40 Star-Vincent, drilling 300 feet. Ratcliff and others' No. 1 Perry, drilling 2,050 feet.

Coastal Wildcats

In Angelina County, the Flanigan Drilling Co.'s No. 3 at Lufkin is around 450 feet. The Humble Oil & Refining Co. has made a location for No. 1 Henderson to be a deep test.

Sabastian & Smith's No. 1 on the lands of the Lewis-Warner Stave Co. is rigging in Sabine County.

The Arkansas Fuel & Oil Co. has a location west of Huntsville, Walker County.

In Brazoria County, the Gulf Production Co. is drilling No. 1 Perry on the south side of Stratton Ridge Dome and the Ridge Oil Syndicate's No. 1 Dannebaum on the north side. The Roxana Petroleum Corp.'s No. 2 Allen Dome, in in the southern part of the county, is below 4,900 feet.

In Chambers County, the Roxana Petroleum Corp. is rigging No. 1 State land, Miss Bluff. The Osage Oil Co., of Oklahoma, has a location near Wallisville.

The Gulf Production Co.'s No. 15 Davis has spudded in with a location made for No. 16 at Long Point.

In Jefferson County, the Houston Oil Co.'s No. 3 Sun-Dyson at Big Hill Dome, southwest of Beaumont, is a 2,605 feet. The Gulf Co.'s No. 2 Bordages at Fannette Dome, west of Beaumont, is around 4,510 feet. The Port Arthur Development Co. will deepen No. 3 at Westbury from 2,290 feet, where it bailed salt water.

In Matagorda County, at Hawkins Dome, Gulf Co.'s No. 1 Parkinson is at 3,465 feet and No. 5 Craig is around 606 feet. The Humble Oil & Refining Co.'s No. 1 Robins in the southwest part of the county, is drilling around 3,150 feet.

The Texas Company's No. 3 League near the Liberty-Chambers County line, is drilling around 819 feet.

In Wharton County, Humphrey Corp. and J. W. Rich joint No. 1 Malone, 5 miles west of Wharton, is below 1,500 feet.

The Texas Company's No. 2 Felder in the Boling Pool is drilling at 1,643 feet. The Texas Company and the Sun Co. are drilling on the northeast flank of the dome on the Farmer tract.

In the Rockdale-Minerva shallow sand district in Milam County, the Gohman Oil Co.'s No. 1 fee, is pumping 40 bbls. at 1,219 feet. Allen and Brown abandoned No. 1 Brown, a wildcat, at 3,212 feet. The bit was in the Edward lime from 3,105 feet to the bottom of the hole.

KANSAS FIELDS

(Continued from Page 45)

Section 25-32-1e. Gypsy Oil Co.'s No. 1 Bishop, SE cor. SE SE, Section 13-32-4e, is drilling at 400 feet. J. A. Hull's No. 16 Kukuk, NE cor. NE NE, Section 24-32-4e, is a rig. Shawver and others are spudding No. 1 S. Widener, NE cor. NE SW, Section 11-30-4e.

Butler County

Hartman & Skaer are spudding No. 1 Owen, SE cor. SE NE, Section 19-29-4e, Butler County. T. C. Johnson's No. 7 Kline, SW cor. NE SW, Section 3-28-6e, is a rig; Phillips Petroleum Co.'s No. 2 Pettit, SW cor. SE SE, Section 17-28-6e, rig; Magnolia Petroleum Co.'s No. 4 Pettit, SW cor. NE NE, Section 20-28-6e, rig; Phillips Petroleum Co.'s No. 2 Blankenship, NW cor. SE NW, Section 16-27-6e, drilling at 710 feet; Empire Gas & Fuel Co. is spudding No. 1 Worrell, SW cor. SW SE, Section 12-27-7e. In the same section, White Eagle Oil & Refining Co. and others' No. 2

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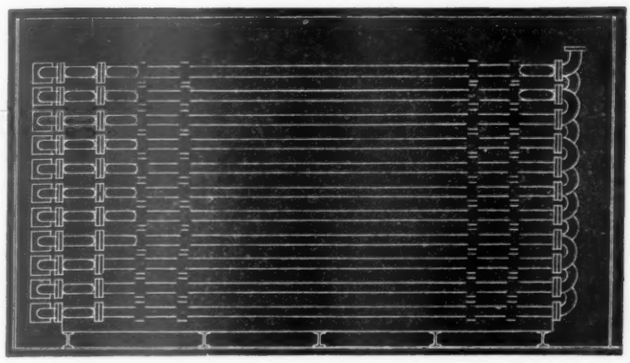
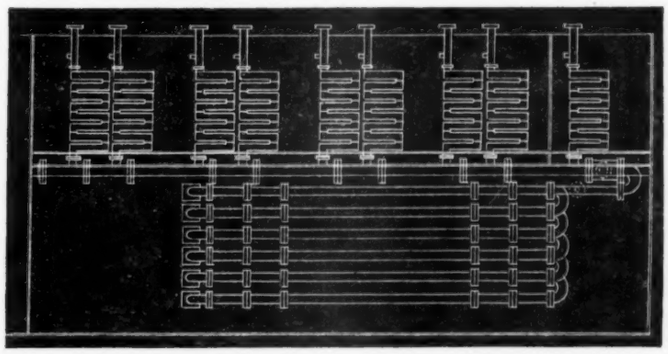
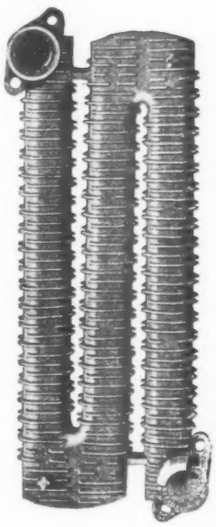


No. 1 Coil—Cooling



No. 2 Coil—Cooling and Condensing



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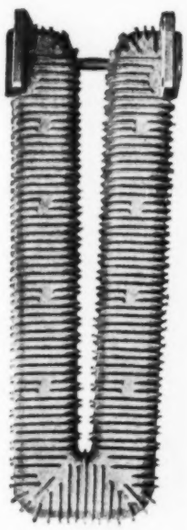

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Stewart, SW cor. SE SW, is drilling at 100 feet. Phillips Petroleum Co.'s No. 1 F. W. Stewart, NE cor. NE NW, Section 13-27-7e, is spudding. Mid-Kansas' No. 3, Harris, NE cor. SE NE, Section 22-27-7e, is a rig; Liberty Oil Co. is spudding No. 1-A Sluss, C NE SE, Section 26-26-5e. D. B. Golden's No. 1 Shaw NW cor. NW SW, Section 20-26-7e, is a rig.

John Markham, Jr., has a dry hole in No. 1 John Gibson, SW cor. NE NE, Section 3-28-6e, at a depth of 3,162 feet (Wilcox sand). Magnolia Petroleum Co.'s No. 2 F. E. Pettit, NW cor. NE NE, Section 20-28-6e, had sand at 3,117-27 feet, and made 22 bbls. the first day.

Lyon County

McCulloch Oil Co. and others' No. 2 H. E. Bradfield, SW cor. NW NE, Section 25-21-10e, is drilling at 300 feet.

Transcontinental Oil Co.'s No. 6-A Atyeo, NE cor. NW NW, Section 31-21-10e, shot with 125 quarts from sand at 2,159-2,204 feet, made 75 bbls. of 40 gravity oil. Wilson and others have a dry hole in their No. 1 D. B. Jones, NW cor. NE NE, Section 35-19-11e, at a depth of 2,058 feet.

SOUTHWEST TEXAS

(Continued from Page 52)

Two of them were gas wells, one spraying oil at the rate of 50 bbls. per hour, later increasing to 70 bbls. per hour, and the other 14 oil producers, which added more than 2,000 bbls. flush production.

Of the gas wells completed one was The Texas Company's No. 1 on Survey 684 in the Carolina-Texas Field, which produced 2,000,000 feet of gas at a depth of 2,597 feet. The liner was pulled at that depth and drilling to a depth of 2,614 feet the well produced 7,000,000 feet of gas. Drilling will continue to a still lower depth.

In the Randado Pool in Jim Hogg County, six completions were recorded for the week just closed. Simms Oil Co. completed its No. 11 on Survey 291, which made at the rate of 300 bbls. of oil per day. They also completed their No. 12, a distance of 359 feet north of No. 11, which started off with 25,000,000 feet of gas and spraying oil at the rate of 50 bbls. per hour, later increasing, when the head of gas had blown off, to 70 bbls. per hour. Grayburg's No. 4, on Survey 81, came in making 150 bbls. and Johnson and others completed their No. 8 on Survey 291, which made 60 bbls. E. L. Smith, of Maddox, completed No. 4 on Survey No. 291, making a small well.

In the Aviator Pool

The Aviator Pool was credited with six completions for the week. The largest well was the Crown Central-Rydal No. 15, which came in making 250 bbls. This well is located on Block 17. The Columbia Oil Corp. completed its No. 12 on Block 76 and the Simms Oil Co. completed its No. 4, which made a small gas well, no gauge taken. The Staley-Wynne Oil Co. completed its No. 16 on Block 18, which swabbed 75 bbls. Gibson Oil Co.'s No. 10-A on Block 13 made 125 bbls., while the Ruthada Oil Co. completed its No. 5 on Block 18, making 200 bbls.

In the Mid-Ojuelos Pool, the Crown Central completed its No. 11, which made 110 bbls. and the Jackson Shankle its No. 2, making 75 bbls.

In the Henne, Winch & Fariss Pool in Jim Hogg County, Kitselman & St. Albans completed their No. 44, which made 500 bbls. flush production.

TAKING TEMPERATURES OF PRODUCING OIL WELLS

(Continued from Page 32)

on the dial shown at the right near the front of the instrument. The brake consisting of two steel bands and a weight attached to the end of the handle serves to keep the instrument under control and also to assist in lowering the thermometers into the well. The gears shown on the right side of the instrument operate a right and left hand cam which distributes the wire on the reel. The reel will carry about 8,500 or 9,000 feet of No. 20 steel piano wire. The frame work is mounted on four legs which are screwed into the lower ends of steel tubes two of which are shown on the right of the figure. It is further anchored to the floor by means of anchor rods inserted in small holes in the frame, one of each being shown at the end of the frame. This instrument has been used to lower apparatus to the depth of more than 4,300 feet, and by adding proper gears or a motor practically any depth can be reached by this method.

Figure 8. This brass weight, weighing seven pounds, is attached to the end of the piano wire and serves to carry the line into the well.

Figure 9. The brass tube shown in this photograph contains a set of three thermometers as shown elsewhere, packed in cotton ready for lowering into the Lake deep well drilled by the Hope Natural Gas Co. at Fairmont, W. Va. The wheel shown at the right was used to measure the depths to which the thermometers were lowered. The opening of the well is shown immediately below the suspending brass tube containing the thermometers. The brass tube shown in the figure is attached to the dart of the bailer with a brass line about 12 or 15 feet in length. In case the thermometers are lowered below the casing they are often times placed in a smaller brass tube and the tube in turn is inserted in the groove of a wooden block which is bolted to the dart of the bailer. Three sets of these thermometers each can be lowered at once by this method.

LIMA FIELD WORKERS AT 6TH ANNUAL PICNIC

FINDLAY, Ohio, Aug. 21.—The sixth annual picnic of the oil workers of the Lima Field was held at Riverside Park, Findlay, on Wednesday and was attended by over 8,000 people. Modern means of quick and easy travel by motorcar over Ohio's excellent roads made this picnic the largest in attendance of the whole annual series. The picknickers were permitted to come early and stay late.

The Ohio Oil Co. shut down all its operations for the day and the Buckeye Pipe Line Co. permitted as many men to go as the service would stand.

The day was devoted to a program of sports, the renewal of old acquaintanceships and the making of new friendships. Otto Donnell, vice president of the Ohio Oil Co., whose interest in children is proverbial, saw to it that arrangements were made for the entertainment of the host of little ones present.

At the first annual picnic, and at each picnic since, a large silver cup was inscribed with the date and point at which the picnic of the year was held. This cup, with its standard, was presented this year to Otto Donnell as a mark of the high regard in which he is held.

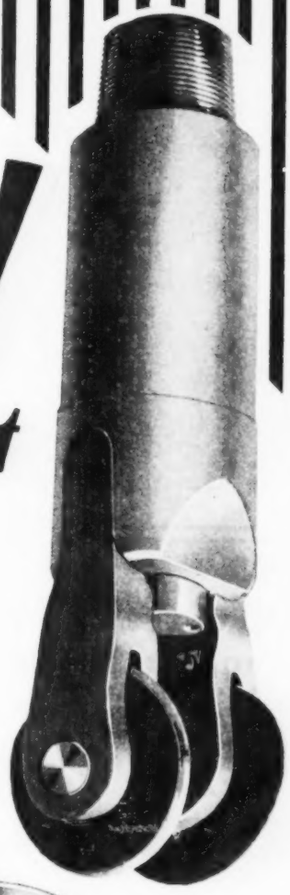
CRUDE STOCK CHANGES

Pipeline and tank farm gross domestic crude oil stocks east of the Rocky Mountains decreased 3,112,000 bbls. in the month of July, according to returns compiled by the American Petroleum Institute from reports made to it by representative companies. The net change shown by the reporting companies accounts for the increases and decreases in general crude oil stocks, including crude oil in transit but not producer's stocks. The following is the Institute's summary for the month of July of the increases and decreases in stocks at refineries covering approximately 79 per cent of the operating capacity east of California.

	Increase (Bbls. 42 Gals.)	Decrease (Bbls. 42 Gals.)
Domestic crude oil	132,000	
Foreign crude oil	86,000	
Gasoline		1,981,000
Kerosene	405,000	
Gas and fuel oil	2,758,000	
Lubricating	196,000	
Miscellaneous		16,000
Total	3,577,000	1,997,000
Deduct	1,997,000	
Net increase	1,580,000	

at Last!

The Disc Bit Achievement of All Time



A Disc Bit has finally been developed and tried out which eliminates any chance of collapse or breakage causing costly fishing jobs.

The Painter Disc Bit is the *only* bit manufactured at the present time in which the cutting disc is supported on *both* sides. The body is solid forged throughout, of highest grade Chrome Vanadium Steel, heat treated. Painter Disc Bits are of special alloy, heat treated to give maximum wear, hardened and ground to gauge.

The Titusville Forge Company ABSOLUTELY GUARANTEES TO REPLACE WITHOUT CHARGE ANY HEAD BROKEN IN SERVICE, NO MATTER HOW LONG USED. Maximum safety is assured; no cast steel parts; no threads except on joints.

THE TITUSVILLE FORGE COMPANY UNQUALIFIEDLY GUARANTEES TO REPLACE FREE OF CHARGE ANY TIVAN CABLE OR ROTARY BIT WHICH JUMPS THE PIN. THIS APPLIES ONLY TO OUR TIVAN BRAND.

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Has the "Stuff," and Shows It

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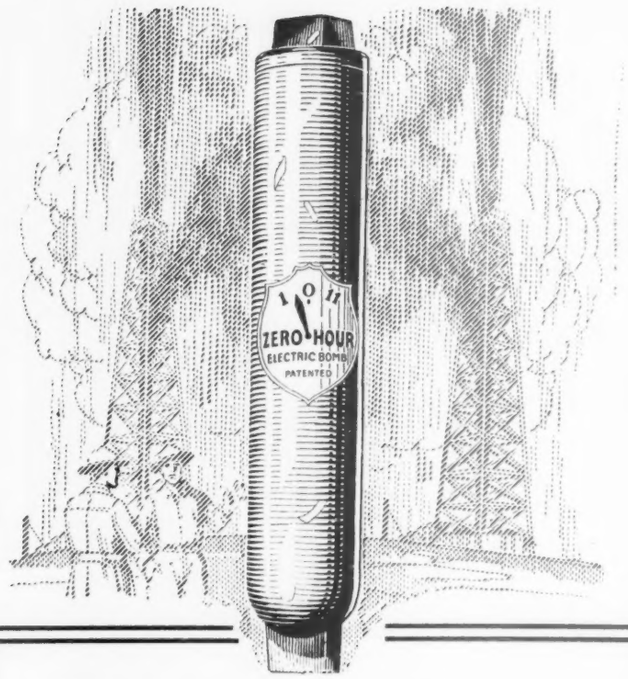

140 of the 240 Wells Shot in the Panhandle Field January 1st to July 31st Were Shot With—

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It is only natural that producers in the Panhandle should turn to Zero Hour Electric Bombs in preference to all other methods for putting off shots. Zero Hour Electric Bomb is proven by two years successful use. More than 2400 have been used in Mid-Continent, Wyoming, Texas, New Mexico, Canada, India and elsewhere. Everywhere the results have been the same—it is the one safe, sure and satisfactory detonator for use under any condition or circumstance.

Safe

Use of Zero Hour Electric Bomb has never resulted in damage to well or casing. Any man accustomed to handling explosives and who will follow simple directions can use it without danger to person or property.

Dependable

Our records covering every Zero Hour Electric Bomb placed show that the first Bomb has exploded the charge of explosive in the well ninety-eight times out of every hundred. The average of every successful shot has been within two minutes of the time intended.

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STRATIGRAPHY AND STRUCTURE LOS ANGELES BASIN DESCRIBED

By J. E. Eaton*
Consulting Geologist and Petroleum Engineer, Los Angeles, California

Los Angeles Basin is a highly cultivated and productive depression of about 1,000 square miles lying between the Pacific Ocean and mountains to the north and east. Low hills and gentle swells due to anticlinal structure locally trend northwest across its surface. Much of the northern portion is occupied by the city of Los Angeles and suburban towns. (Figure 1).

Various published articles have dealt with local geologic phases, or particular oil pools, of Los Angeles Basin. A complete bibliography of these is beyond the scope of this paper, but certain works of Eldridge and Arnold[2] and Loel,[3] which have been especially useful, are here acknowledged.

The writer is indebted to Ralph Arnold for the identification of some of the fossils from the Vaqueros formation, to Paul P. Goudkoff for a similar service for the Fernando group, and to William S. W. Kew for constructive criticism of portions of the manuscript.

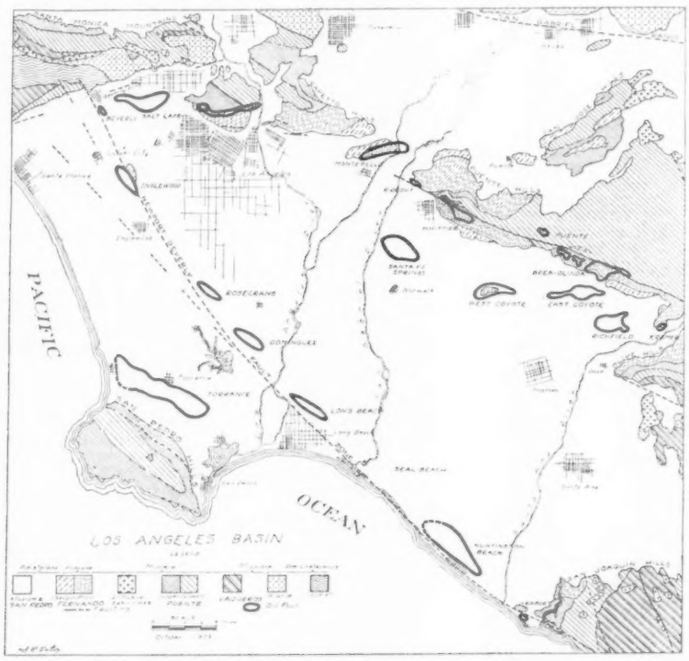

Fig. 1.—Geology and oil developments of Los Angeles Basin.

Geology-Stratigraphy

The strata of Los Angeles Basin vary widely in different districts due to varying distances from the chief source of the sediments which, during the latter half of Tertiary time, were derived largely from the north and east. Gravitational sorting has caused conglomerates of one locality to be represented by sandstones in another, sandstones to grade into shales, and vice versa. Thickness of the formations are likewise variable due to erosion, to unconformities above and below, and to faulting. There is also a thinning of the sediments basinward. These features, commonly combined with poor bedding, make detailed sections difficult to obtain.

Pre-Monterey Rocks

Schist (pre-Cretaceous).—In the Santa Monica Mountains on the north side of Los Angeles Basin, a dark schist is exposed which is intruded by granite. Its age is unknown except that it is Jurassic or older. Franciscan chert, schist, and sandstone of probable Jurassic age occurs in the San Pedro Hills.

Granitic rocks (pre-Cretaceous).—Diorite and biotite and hornblende granites largely bound the basin upon the north and northeast. The latter have intruded the schist in the Santa Monica Mountains.

Cretaceous and early Tertiary Rocks.—Strata of Cretaceous, Eocene and Oligocene (?) age are present in the Santa Ana Mountains upon the east, and in parts of the Santa Monica Mountains to the northwest, of the basin's edges. They are not exposed in the basin proper.

Monterey Group

For a brief summary of Monterey time in the Coast province, the writer can do no better than quote Lawson[4] as follows:

"Miocene time in the Coast Range region was characterized by a progressive subsidence with oscillations of the coast. The Miocene sea gradually transgressed the continental margin from the southwest and, as it did so, spread a formation of arkose sands and conglomerates over the greater part of the southern Coast Ranges. This was followed, as the water deepened, with progressive subsidence, by a remarkable deposit of bituminous shales."

Vaqueros formation (Lower Miocene).—The Vaqueros formation is the forerunner of a great organic series. It is the earliest and coarsest phase of a long period of conformable deposition and is the earliest extensive formation outcropping in Los Angeles Basin. The strata in various sections embrace from 1,000 to

(Continued on Page 101)

*Published by permission of the American Association of Petroleum Geologists.

[1]Read before the San Francisco meeting of the American Association of Petroleum Geologists, November 20, 1925. As a contribution to the general geology of Los Angeles Basin, the stratigraphy, earth movements, and structure of the district are discussed. Formations previously described from separated localities are correlated for the basin as a whole, and certain sediments are subdivided into recently recognized divisions. It is concluded that the productive structure of the district is in part a result of stresses produced by differential horizontal movements which occurred in Pliocene and Pleistocene time.

[2]George H. Eldridge and Ralph Arnold, "The Santa Clara Valley, Puente Hills and Los Angeles Oil Districts, Southern California," U. S. Geol. Survey Bull. 309, 1907.

[3]Ralph Arnold and Wayne Loel, "New Oil Fields of the Los Angeles Basin," Amer. Assoc. Petrol. Geol., Vol. 6 (1922), pp. 303-16.

[4]A. C. Lawson, "Report of the Earthquake Investigation Commission on the California Earthquake of April 18, 1906," Carnegie Inst. of Wash., Vol. 1, Part 1 (1908), p. 9.

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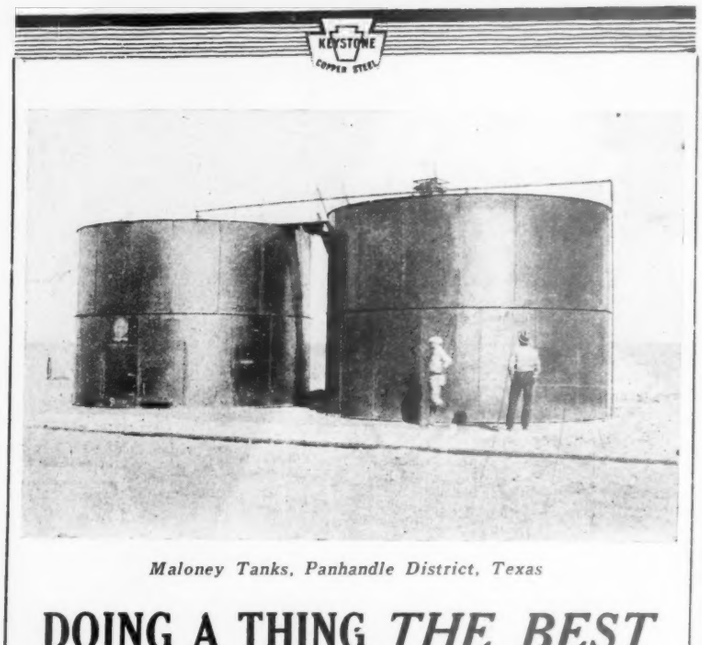

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INTERPRETING THE EARTH'S TEMPERATURES

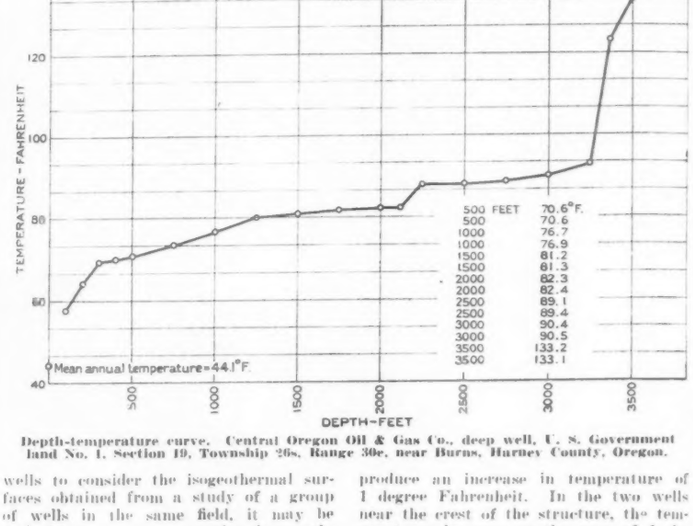
(Continued from Page 72)

quite abruptly from one gradient to another. The other lesson that may be drawn from this set of observations is the practical certainty that an observer equipped with suitable apparatus can disentangle the most complicated depth-temperature curve that he is likely to encounter.

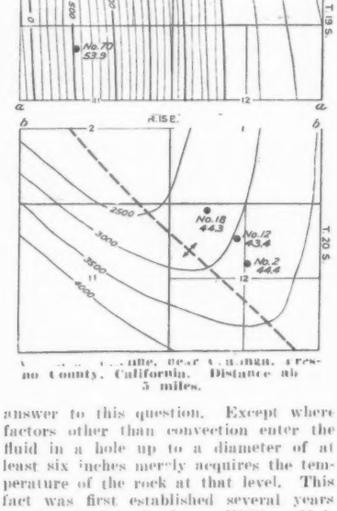
Convection Circulation

Before leaving our study of individual wells to consider the isogeothermal surfaces obtained from a study of a group of wells in the same field, it may be desirable to answer a question frequently asked by both the theoretical and practical investigator as to the possibility of convective circulation of fluid in a well. All of the evidence points to a negative answer to this question. Except where factors other than convection enter the fluid in a hole up to a diameter of at least six inches merely requires the temperature of the rock at that level. This fact was first established several years ago by the late Professor William Hallock of the United States Geological Survey who tested a dry well of great depth south of Wheeling, W. Va., and later duplicated his observations when the well was filled with water. Practically no differences can be detected in the two sets of observations. The same conclusion is to be drawn from a great number of my own observations in which the wells were partly filled with water. As it is impossible to determine the level of the water from the depth-temperature curves, the perturbations due to convection in the fluid must be very small, if indeed, they exist at all.

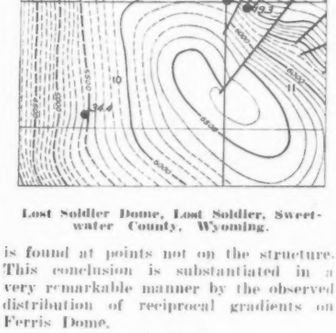
Turning now from our study of individual wells to the study of a group of wells in the same field in which the depth-temperature curves are of the smooth convex type of which the curve of the E. M. Day well is a typical example, we have various methods of procedure at our disposal, but it will suffice here to describe two only of the available methods. One method consists merely in plotting the reciprocal gradients on a structure map. On the Lost Soldier map, for example, the small solid disks represent the location of the well and the number written close to the disk represents the reciprocal gradient, or the number of feet in depth which is required to produce an increase in temperature of 1 degree Fahrenheit. In the two wells near the crest of the structure, the temperatures increase at the rate of 1 degree Fahrenheit in 19.2 and 19.3 feet while in the other well farther down on the structure an increase in depth of 34.4 feet is required to produce an increase of 1 degree Fahrenheit in the temperature. On Ferris Dome, the values range from 1 degrees Fahrenheit in 47.3 feet near the top of the dome to 1 degree Fahrenheit in 63.0 feet at a point about 5 miles distant; and at Coalinga, Cal'f., the range is from 1 degree Fahrenheit in 44.3 feet at a point near the axis of the anticline to 1 degree Fahrenheit in 54.9 feet at a point about 6 miles north of the first point. In each case the smallest numbers are found near the crest of the structure and the numbers increase with rather marked regularity as the distance from the top of the dome increases, until, presumably, a practically constant value is found at points not on the structure. This conclusion is substantiated in a very remarkable manner by the observed distribution of reciprocal gradients on Ferris Dome.



Depth-temperature curve. Central Oregon Oil & Gas Co., deep well, U. S. Government land No. 1, Section 19, Township 26s, Range 30e, near Burns, Harney County, Oregon.



... ville, near Coalinga, Fresno County, California. Distance about 5 miles.



Lost Soldier Dome, Lost Soldier, Sweetwater County, Wyoming.

Salt Creek

On the Salt Creek map the dotted lines represent the structure contours on the second Wall Creek sand. The heavy continuous lines represent the depths at which a temperature of 80 degrees Fahrenheit is reached. These depths are easily interpolated from the depth-temperature curves. Near the top of the dome, the temperature of 80 degrees Fahrenheit is reached at a depth of about 900 feet while on the west side of the

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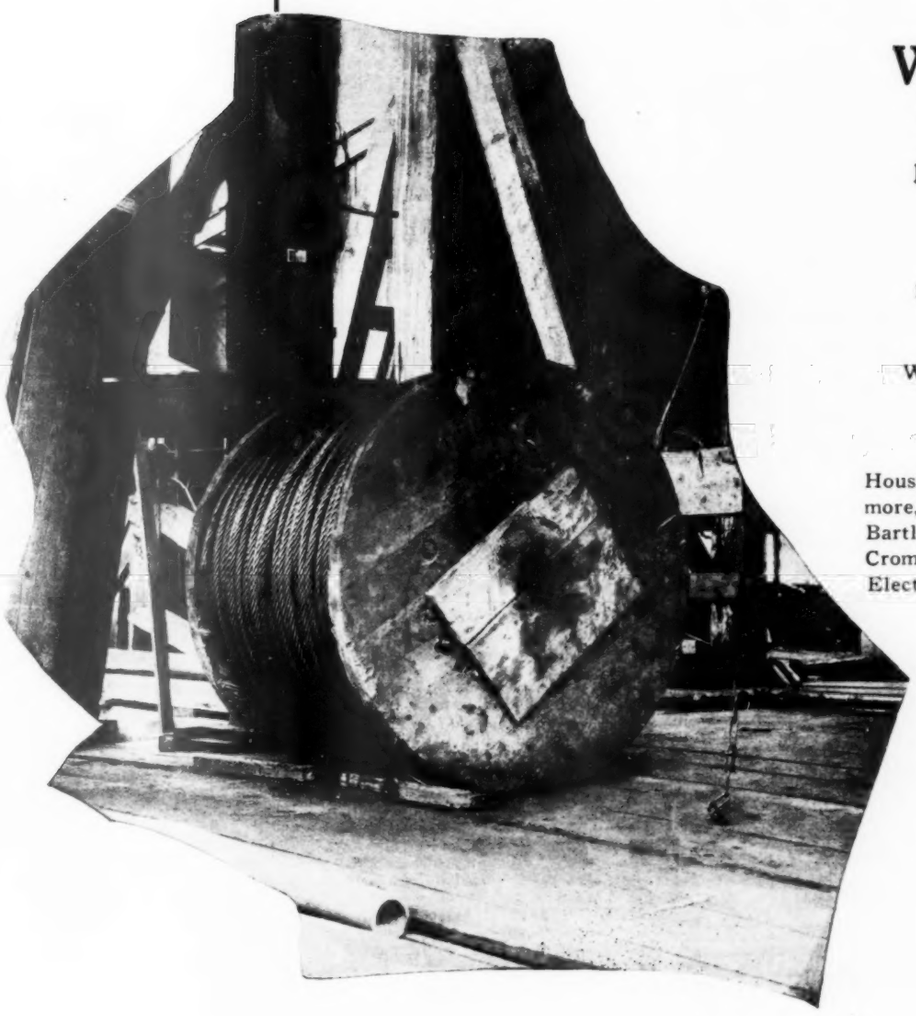

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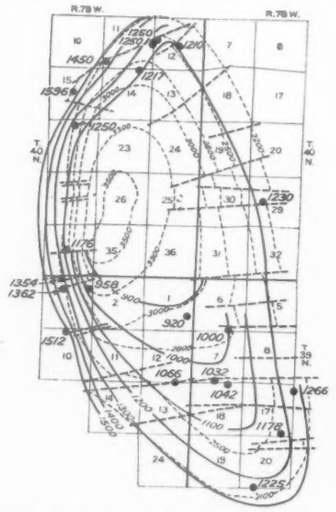
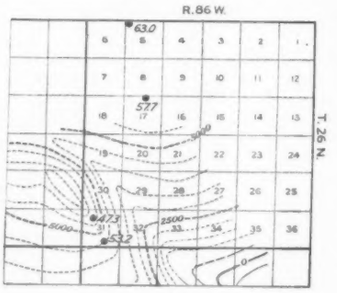
dome a thickness of more than 1,500 feet of strata must be penetrated before this temperature is reached. Between these two extreme depths, the spacing of the contours varies uniformly and continuously so that we have here another method of mapping the structure.

One naturally inquires as to the cause of the variation of temperature with geologic structure. The answers to this question differ widely although it must be



Salt Creek Dome, Salt Creek, Natrona County, Wyoming.

admitted by all that differences in thermal diffusivity are important factors. Rocks containing water or strata inclined to the horizontal permit more heat to escape from the interior of the earth than do horizontal strata or strata saturated with oil which is a poor transmitter of heat. Since the quantity of heat passing through the different strata per unit of horizontal area is the same, it follows



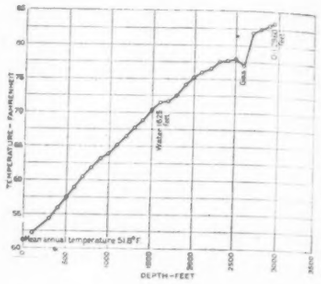
Ferris Dome, near Rawlins, Carbon County, Wyoming.

from the definition of thermal conductivity that the steepest gradients will be found in strata possessing the lowest conducting power.

Summarization

To summarize we may say in a general way that thermal data thus far accumulated point to the possibility of obtaining information in regard to subsurface conditions that cannot be obtained in other ways—the distribution of temperatures with depth being oftentimes a very sensitive reflector of the state of the strata.

Correlating the data from the wells in a particular field, it has been found that the anticlines at Coalinga, Calif., and at Lance Creek, Salt Creek, Warm Springs, Lost Soldier and Ferris Dome Wyoming, could probably be mapped by means of temperature tests alone. With regard to the generality of our tentative conclusion that the highest temperatures are found on the crest of the structure, we have no means of generalizing our result beyond our immediate observations for the reason that it is impossible on account of the great number of factors involved to construct a generalized theory capable of verification by means of a limited number of observations. The most that can be said at present is something like this—that apart from buried hills concerning which we have but very little definite information, the association of high temperatures with the crest of the structures is probably true in the same



Depth-temperature curve, Deep well, E. E. Price No. 9, South Penn Oil Co., near Mannington, Marion County, West Virginia.

sense that the anticlinal hypothesis of the accumulation of oil is true—not absolutely true, but sufficiently true to be a useful guide in both practical and theoretical investigations.

OIL COMPANY COLONY BUILT NEAR REFINERY

HOUSTON, Tex., Aug. 24.—Over a hundred homes have been built by employes of the Humble Oil & Refining Co. under a time payment plan, sponsored by the company, in the addition near the Humble refinery about 3 miles from Goose Creek.

Homes costing approximately $328,000 have been erected since the community was founded a year ago.

The Humble company either builds the houses or allows the employe to secure his own contractor.

Dwellings and lots costing up to $3,500 have an initial payment of 10 per cent cash and 1½ per cent per month. Those costing from $3,500 to $4,000, a payment of 15 per cent cash and 1½ per cent per month. From $4,000 to $5,000, 20 per cent cash down and 1½ per cent per month. If the home owner should at any time decide or be compelled to give up his property he may sell it back to the company for whatever amount he has paid on it, thus assuring him no loss.

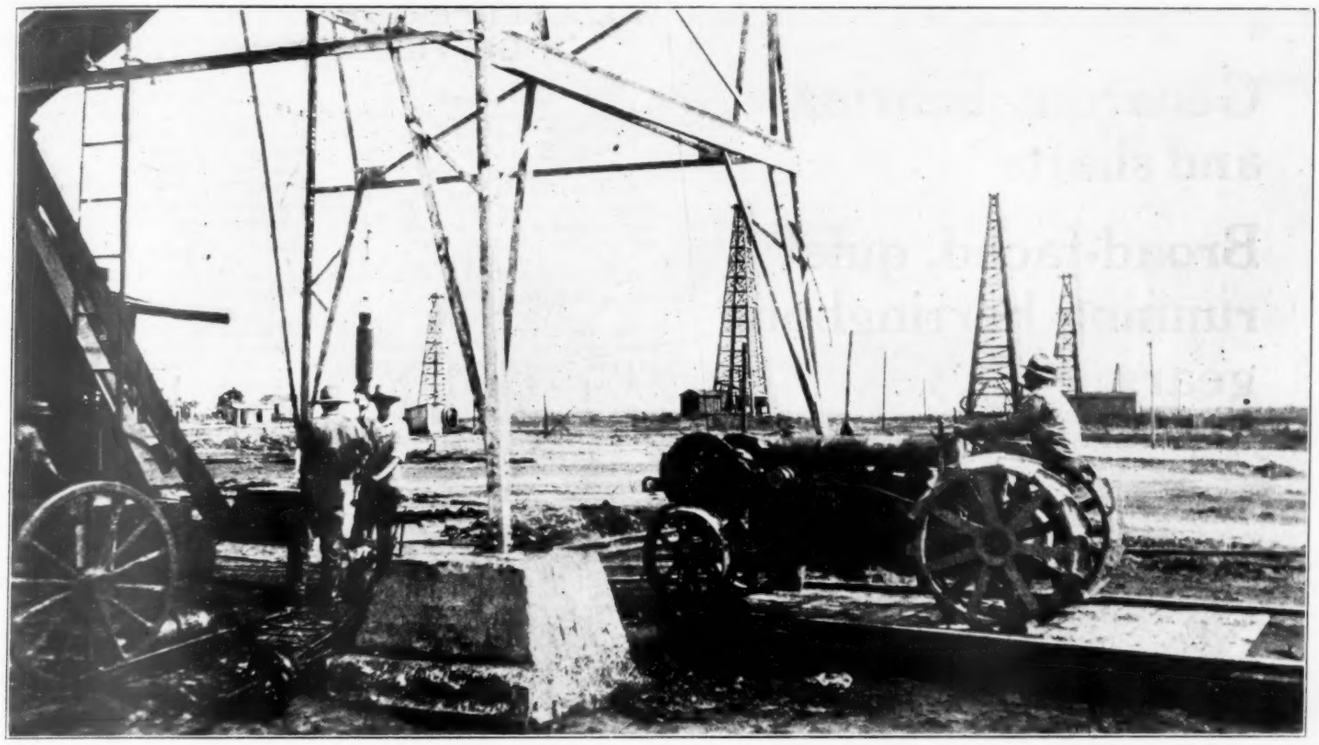
Built Up in Year

A year ago the land was a dense thicket. The company cleared the land, graded and paved the streets, laid cement sidewalks and curbing. There are paved alleyways in each block. The automobile owner has easy access to his garage. Electric lights and an adequate water and sewerage system have been supplied.

"The community center near the refinery is open at all times for employes of the company," Eddie Fitzgerald, building manager of the addition said. "Our employes are taking advantage of the liberal building terms offered, and a model community is rapidly being built up near the refinery at Goose Creek."

LUBRICATION SYMPOSIUM

The lubrication symposium of the American Chemical Society, which was held at Tulsa, Okla., is now available in reprint form. Over 50 double-column printed and illustrated pages are devoted to the present art of lubrication. Contributions from 15 outstanding authorities on the subject were received from the nation's foremost industrial and scientific laboratories. Four of the largest oil companies, the Mellon Institute, the Bureau of Standards, two of the principal manufacturers of thrust bearings, a large maker of internal combustion engines and the largest manufacturer of graphite were among the contributors. A limited number of these reprints are available and may be had at 50 cents each by addressing Erle M. Billings, secretary of the industrial division, American Chemical Society, Research Laboratory, Eastman Kodak Co., Rochester, N. Y.



HE SAID: *"I wouldn't try to run a lease again without the W-K-M Winch"*

About eight months ago Morris Standifer, Field Manager for the Humble Oil Company at Goose Creek, Texas, purchased his first W-K-M Winch. A bit later on, he bought another. In the few words above he sums up what he thinks of them. Read his comment below:

When asked if he would object to telling other oil field men of his experiences with his W-K-M Winches, Mr. Standifer said:

"I am always willing to tell the boys about equipment that has given me service and satisfaction, and our W-K-M Winches have certainly done this. We use them for about every kind of work done on the Company's leases here. We pull rods and tubing, unload barges, pull rigs into place, and do a dozen other kinds of jobs with them.

"One of our toughest jobs is pulling a 2,000-foot well equipped with a string of 3-inch, ten-pound tubing. Recently, we pulled both rods and tubing at the same time with our W-K-M Winch, and the tubing was loaded with oil. We used five lines for this job—although we could probably have done it with four. I don't believe in riding a machine too hard, though.

"We are pulling 3,000-foot strings of 2-inch tubing right along, and have no trouble whatever. We find the W-K-M Winch with the Fordson Tractor very fast, economical and mighty convenient. As a matter of fact, I wouldn't try to run a lease again without the W-K-M Winch."

Mr. W. F. Bradley and Mr. L. M. Butler are assistant production superintendents under Mr. Standifer. Each has charge of one of the Company's Goose Creek leases, and on each lease a W-K-M Winch is used. Mr. F. E. Taber, gang pusher under Mr. Bradley, shown above operating one of the Company's W-K-M Winch outfits, says of it:

"I have found the W-K-M Winch and Fordson Tractor to be just about twice as fast as a standard rig in pulling rods and tubing. Naturally, we are able to get our wells back on the pump quicker than with old methods, and the cost of operation is a great deal less. It is mighty fast on other classes of work, too. Not long ago we broke out 38 thribbles of 3-inch drill stem in 3½ hours, using the cathead. That's making time! Of course the pipe was racked in the derrick to start with."

If you have not yet investigated the W-K-M Winch for use on your lease, by all means send in the coupon below. It will bring you our 24-page Winch Book and other valuable information without obligation. *Do it right now!*

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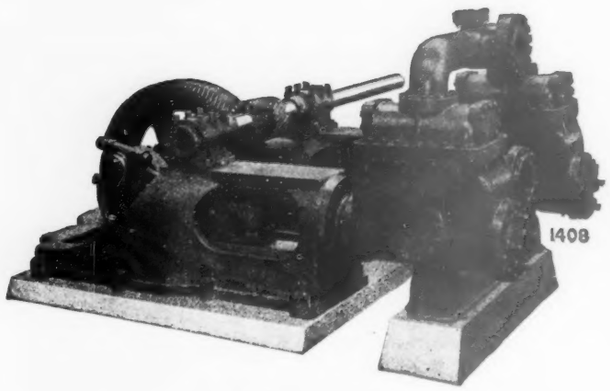

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Green Valley Oil Co.'s No. 2 J. P. Wilson, shut down at 2,170 feet. John Rosenborough and Skinner's No. 1 Skinner, shut down at 1,055 feet.

Coke County

Lipan Oil Co.'s No. 1 E. C. Rawlings, shut down at 2,640 feet.

Concho County

The Exploration Co.'s No. 1 Hartgrove, spudding. Kemper, Kinberlin and others' No. 1 Schultz, shut down at 1,520 feet. Culbertson Brothers' No. 1 W. S. See, drilling at 335 feet. Gene Mays and others' No. 1 Hartgrove, drilling at 225 feet.

Crane County

Cranfill Brothers Oil Co.'s No. 1 P. J. Lea, underreaming at 572 feet. Duffy Brothers and others' No. 1 Cowden Brothers, moving in rig. Gulf Production Co.'s No. 1 State-Lasseter, set 12-inch casing at 110 feet; No. 1 Crier-McIlroy, drilling at 1,100 feet, top salt at 990 feet; No. 2 Crier-McIlroy, drilling at 1,790 feet; No. 3 Crier-McIlroy, drilling at 1,188 feet; No. 2 J. T. McIlroy, drilling at 1,255 feet; No. 3 J. T. McIlroy, drilling at 2,335 feet in anhydrite. Independent Oil & Gas Co.'s No. 1 E. S. Hughes, building rig. Magnolia Petroleum Co. and others' No. 2 University Church, drilling at 930 feet. Magnolia Petroleum Co.'s No. 1 O'Keefe (University), top lime at 2,913 feet, set 6-inch casing at 2,946 feet, shut down for control head at 2,966 feet. Marland Oil Co.'s No. 1 Hughes-Gibbs, drilling at 400 feet; No. 2-C E. S. Hughes, building rig; No. 1-D E. S. Hughes, building rig; No. 1-E E. S. Hughes, moving in material. E. P. Zoch and Marland Oil Co.'s No. 2 Keith-Hughes, drilling at 1,580 feet. The Texas Company's No. 1-F Union Land Co., underreaming at 2,300 feet, oil running over casing from pay 3,014-16 feet; No. 2 H. M. King, drilling at 1,220 feet, top of salt at 680 feet. Tidal Oil Co.'s No. 1 University, drilling at 1,525 feet, top of salt at 1,135 feet. The Texas Company's No. 1 Cowden, shut down at 3,820 feet.

Crockett County

The California Co.'s No. 2 University, drilling at 2,691 feet, top of lime at 2,648 feet. Cranfill Brothers Oil Co.'s No. 1 Harris, location. J. S. Cosden and others' No. 1 Noelke, shut down at 3,275 feet. Cumberland Oil & Gas Co.'s No. 1 Couch, drilling at 1,085 feet. Magnolia Petroleum Co.'s No. 1 Shannon, plugging to abandon at 4,372 feet; No. 2 Shannon, location. Marland Oil Co. and Wallace's No. 1 J. S. Pierce, location. Republic Production Co.'s No. 1 L. P. Powell, building rig. William Schaffer and others' No. 1 University, still fishing casing at 2,191 feet. Ben Simon and others' No. 1 Shannon, shut down for water at 1,992 feet. J. D. Young and Carl Cromwell's No. 1 R. Massie, shut down for casing at 1,625 feet; No. 1 Shannon, location. F. P. Zoch and Marland Oil Co.'s No. 1 University, shut down at 2,005 feet. H. F. Wilcox Oil & Gas Co.'s No. 1 University, total depth 2,165 feet, straightreaming.

Culberson County

Big Lake Oil Co. and others' No. 1 C. L. Cass, moving in material. James H. Gardner and others' No. 1 Radford, moving in material. Deep Rock Oil Co.'s No. 1 Kloh & Rumsey, drilling in hard sand at 3,110 feet, top of black lime at 3,083 feet. The Pure Oil Co.'s No. 1 Mrs. G. H. Quaid, shut down for orders at 5,006 feet.

Ector County

J. S. Cosden, Henry Zweifel and others' No. 1 Johnson, drilling in red sand at 3,207 feet. J. S. Cosden and others' No. 1-A G. W. Connell, drilling in anhydrite at 1,400 feet; No. 1-B W. E. Connell, fishing bit at 3,080 feet. The Exploration Co.'s No. 1 Kloh & Rumsey, drilling in anhydrite at 2,140 feet. Llano Oil Co. and others' No. 1 E. P. Cowden, running 20-inch casing at 105 feet. Simms Oil Co.'s No. 1 W. P. Edwards, drilling red rock at 1,305 feet. F. E. Skinner and Eastland Oil Co.'s No. 1 J. W. Buchanan, drillin in anhydrite at 2,875 feet. Leigh Taliaferro and others' No. 1 Henderson, shut down for casing at 695 feet.

Fisher County

Ideal Oil Co.'s No. 1 W. F. Martin, drilling gray lime at 2,575 feet.

Gaines County

Hucony Oil Co.'s No. 1 Lindsey, underreaming 6-inch at 1,705 feet.

Garza County

Deep Rock Oil Co.'s No. 1 S. M. Swenson, drilling lime at 2,900 feet. Emerald Oil Co.'s No. 1-A Connell, shut down at 3,200 feet. No. 1 J. M. Boren, cleaning out at 2,600 feet.

Glasscock County

Case & Hoover and others' No. 1 Sparkman, dry and abandoned at 3,300 feet. Marland Oil Co.'s No. 1 Nellie Calder, fishing for 8-inch at 2,075 feet.

Howard County

Deep Rock Oil Co.'s No. 1 W. T. Scott, dry and abandoned at 3,605 feet. Joe Edgar and others' No. 1 Roberts, underreaming 10-inch at 765 feet. Lockhart & Carey's No. 1 Dora Roberts, drilling at 335 feet; No. 1 W. T. Scott, drilling at 1,202 feet. Magnolia Petroleum Co.'s No. 1 Otis Chalk, completed, 88 bbls., at 1,570-83 and 1,599-1,606 feet; No. 2 Otis Chalk, spudding; No. 3 Otis Chalk, moving in machine. Marland Oil Co.'s No. 2 Otis Chalk, drilling at 698 feet. Owen & Sloan's No. 2 Otis Chalk, swabbing 40 bbls. at 1,565-1,607 feet. Reeves, Apperman and others' No. 1 H. R. Clay, drilling at 325 feet. Transcontinental Oil Co.'s No. 1 Roberts, dry and abandoned at 3,730 feet.

Jeff Davis County

Herbert Oil Co.'s No. 1 T. M. Wingo, rigging up at 3,000 feet. Humble Oil & Refining Co.'s No. 1 W. W. McCutcheon, drilling at 2,230 feet. J. K. Hughes Development Co.'s No. 1 J. Z. Means, rigging up; No. 2 J. Z. Means, location.

Jones County

Phillips Petroleum Co.'s No. 1 Joe Winters, drilling at 1,520 feet. Shaw & Rathke and others' No. 1 William Bristow, shut down at 590 feet. J. C. Yancey and others' No. 1 Rowell, spudded and shut down; No. 1 Herndon, spudded and shut down.

Kent County

The Texas Company's No. 1 Barron, drilling at 4,115 feet.

Loving County

Lockhart & Co.'s No. 1 E. L. Allen, drilling at 1,750 feet.

Lynn County

The Hart Oil Corp.'s No. 1 C. O. Edwards, cleaning out at 860 feet.

Midland County

M. Agress and others' No. 1 Jones, shut down at 2,113 feet. Rook & Zimmerman's No. 1 Hill, shut down at 3,715 feet.

Mitchell County

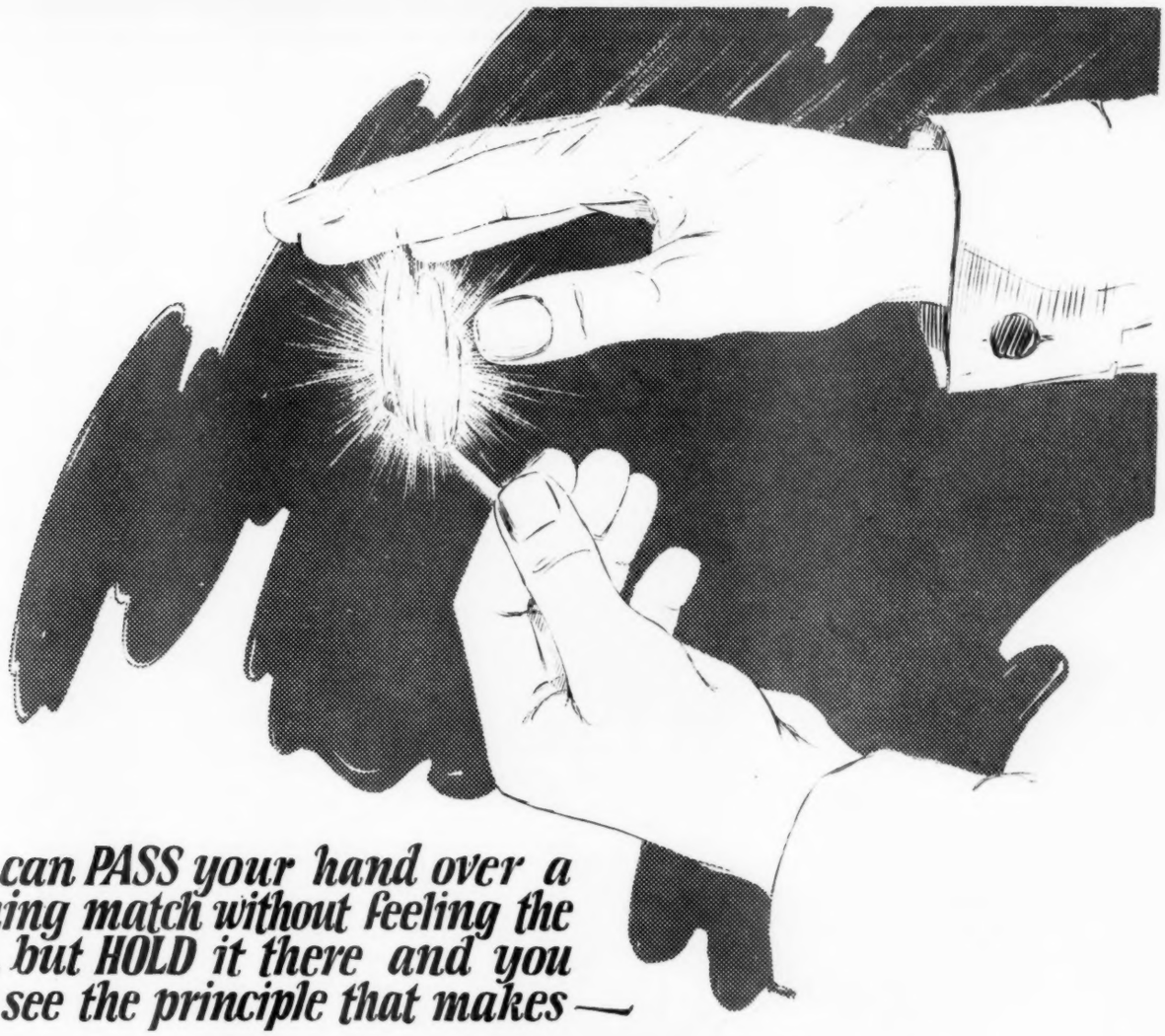
Teas & Stivers' No. 1 Hardee, spudding. The California Co.'s No. 1 J. J. Handley, drilling at 1,335 feet. B. H. Cogdell's No. 1 F. E. McKenzie, shut down at 125 feet. Owens & Sloan's No. 1 C. P. Conoway, drilling at 900 feet. Magnolia Petroleum Co.'s No. 1 G. W. Womack, rigging up to drill deeper at 2,630 feet. Morrison & Thompson's No. 1 Hyman, fishing for bit at 3,150 feet. Mid-Kansas Oil & Gas Co.'s No. 2 Ellwood, straightening hole at 445 feet. F. F. Zoch and others' No. 1 J. J. Ford, rigging up.

Nolan County

Hucony Gas Co.'s No. 1 Arthur Sears, drilling at 360 feet.

Pecos County

Cromwell & Kimberlin's No. 1 Scharff-Blackman, rigged up and shut down. Dixie Oil Co.'s No. 1 Hershenson, shut down for orders at 5,240 feet. Lloyd & Miller's No. 1 Bonebrake, location. Transcontinental Oil Co.'s No. 1 Perry, drilling at 3,425 feet. Southern Development



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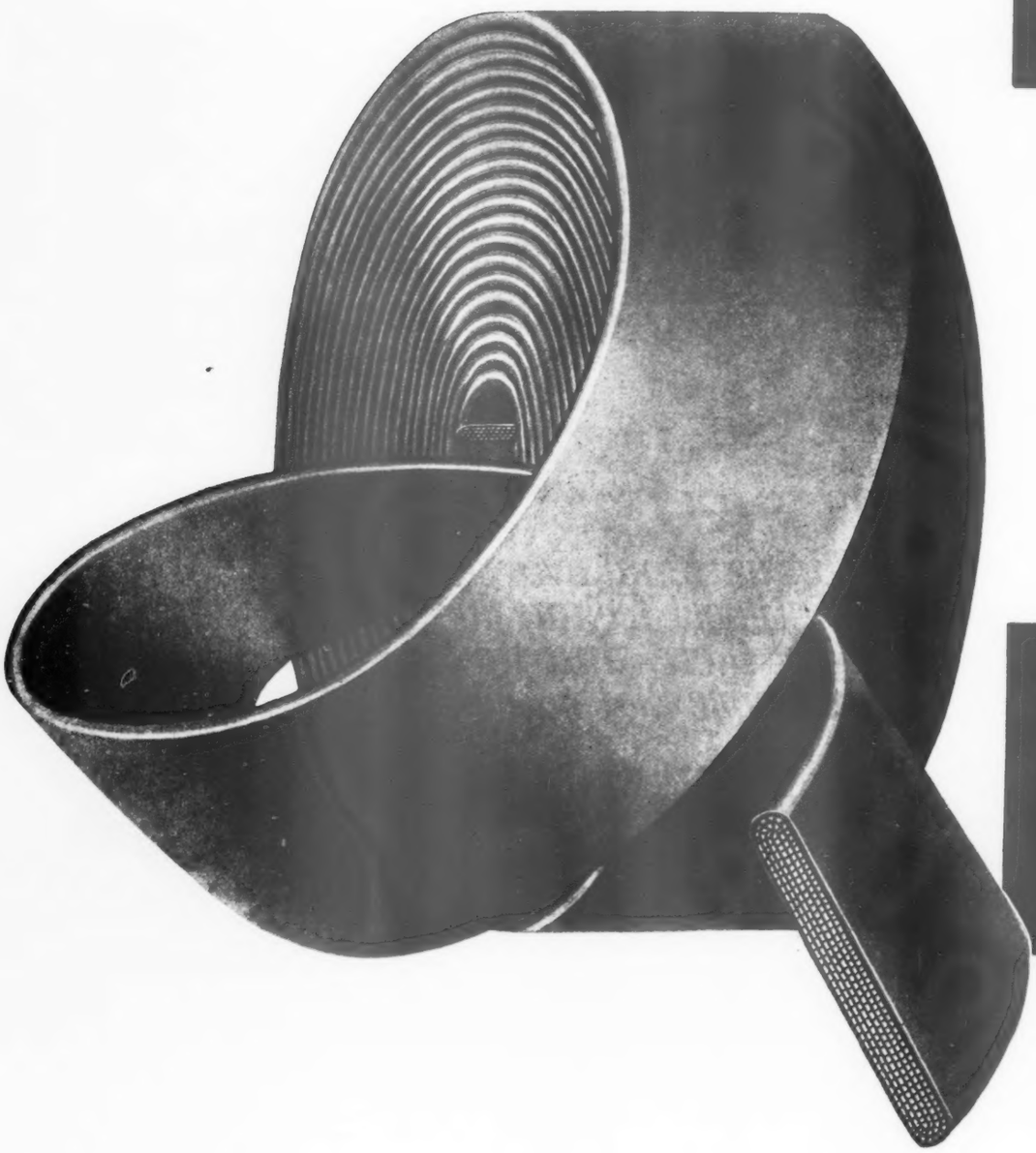

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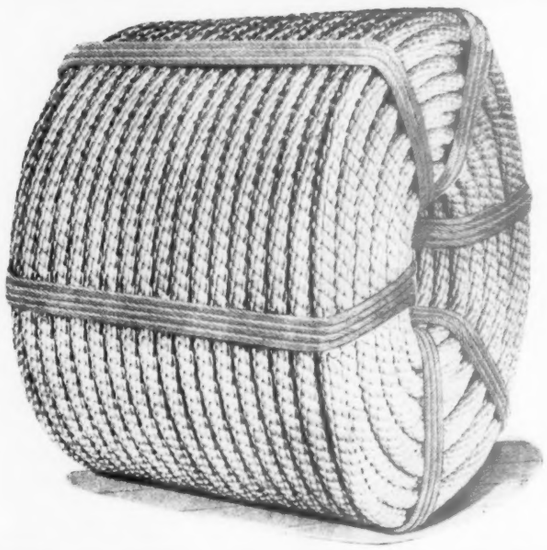

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Co.'s No. 1 R. G. Heiner, location. Quinby Oil Co.'s No. 1 Townsite, shut down at 2,800 feet. West Texas Exploration Co.'s No. 1 Macy, shut down at 1,160 feet.

Presidio County

Hadlock & Miller's No. 1 Tootle estate, drilling by casing at 2,200 feet.

Reagan County

H. D. Camp and others' No. 1 University, shut down at 2,773 feet, hole filled up 300 feet with sulphur water in 10 hours at 2,770 feet. Marland Oil Co.'s No. 1 University, location. Marland Oil Co. and Mascho's No. 1 Sawyer Cattle Co., drilling at 3,140 feet. Marland Oil Co. and Frank Pickerell's No. 1 Sawyer Cattle Co., fishing for tools at 2,330 feet. Ben Simon and others' No. 1 R. A. Waters, shut down at 2,030 feet.

Reeves County

Schooler, Slack and others' No. 1 Abram, shut down at 2,405 feet. Gresham & Hunter's No. 1 State land, shut down at 600 feet.

Runnels County

Sillix & Rainwater and others' No. 1 Krubber.

Schleicher County

Beavers & Leath and others' No. 1 J. A. and W. T. Whitten, spudded and shut down. Cope & Dalton's No. 1 Sol Meyer, shut down at 560 feet.

Scurry County

Camp Springs Oil & Gas Co.'s No. 1 J. O. Quinn, shut down at 3,866 feet. Fogelson and others' No. 1 Boyce, temporarily abandoned at 1,905 feet; No. 1 Haney, location. Northwest Co.'s No. 1-A H. P. Welborn, tested 5 bbls. oil and 3 bbls. water at 3,392-3,402 feet, total depth 3,428 feet.

Stonewall County

Arkansas Fuel Co.'s No. 1 Craft, shut down at 3,698 feet. Swenson Oil Corp.'s No. 1 Ward, shut down at 3,828 feet.

Sterling County

Co-Operative Lease & Development Co.'s No. 1-A E. W. Douthett, drilling at 2,920 feet. The Exploration Co.'s No. 1 C. A. Boome, running 8-inch, good show of oil at 1,340-45 feet. H. D. Rummel and others' No. 2 L. T. Clark, shut down for orders at 1,175 feet.

Sutton County

Chesapeake Oil Co.'s No. 1 Clarkson-Allison, shut down at 3,512 feet.

Taylor County

Sanger Oil & Refining Co.'s No. 1 Anderson, shut down at 1,916 feet; No. 2 Anderson, rig; No. 1 J. F. Gillespie, rig. City of Abilene's No. 1 fee, rig.

Terrell County

Sun Oil Co.'s No. 1 Scott, rig up, moving in tools. E. T. Williams and others' No. 1 Snowden, drilling at 1,675 feet.

Tom Green County

M. D. Bryant and others' No. 1 Llano County School land, drilling by tools at 2,980 feet. World Oil Co.'s No. 1 Pulliam, drilling at 2,290 feet.

Upton County

Atlantic Oil Production Co. and others' No. 1 Baker, location. Dixie Oil Co.'s No. 6 Burleson, swabbed an average of 40 bbls. for five days at 2,108-48, putting on pump; No. 7 Burleson, drilling at 465 feet; No. 8 Burleson, moving in material; No. 3 Hughes, drilling at 1,845 feet; No. 4 Hughes, drilling at 1,600 feet; No. 5 Hughes, building rig. W. W. Donnelly & Gerk's No. 1 Rankin. Dunning and others' No. 1 Crier-McElroy, spudding. Gulf Production Co.'s No. 2 M. L. Baker, drilling at 400 feet in red mud; No. 1 M. L. Baker-B, building rig; No. 1 J. H. Shirk-D, rigging up. Gulf Production Co.'s No. 1 Sanger, drilling at 2,950 feet in lime. Humble Oil & Refining Co.'s No. 1 A. S. Burleson, spudding at 300 feet; No. 2, building rig; No. 1 J. T. McElroy, drilling at 500 feet; No. 1 Ricker & Dodson, shut down for pipeline connection, 1,200 feet of oil in the hole at 2,058-59 feet. Independent Oil & Gas Co.'s No. 2 Len Taylor, location; No. 3 Len Taylor, rigged up and shut down; No. 4 Len Taylor, drilling at 525 feet, top of salt at 435 feet; No. 5 Len Taylor, rig; No. 6 Len Taylor, drilling at 1,925 feet; No. 7 Len Taylor, drilling at 1,345 feet; No. 8 Len Taylor, shut down for repairs at 275 feet; No. 1 Emma Wooley has 250 feet of oil in the hole at 2,048-2,150 feet; No. 2 Emma Wooley, drilling at 1,880 feet; No. 3 Emma Wooley, building rig; No. 2 Burleson, rigging up; No. 3 Burleson, rig. Johnson & McCamey's No. 1 Shirk, building rig. Kirkwood and others' No. 1 Rankin, drilling at 2,630 feet. McMan Oil & Gas Co.'s No. 1 Mrs. M. L. Baker, drilling at 730 feet, top of salt at 540 feet. Marland Oil Co.'s No. 9 A. S. Burleson, casing parted, swabbed 45 bbls. at 2,112-45 feet; No. 2-A Burleson, drilling at 1,820 feet; No. 3-A Burleson, rigging up; No. 10 Burleson has 900 feet of oil in the hole at 2,168-70 feet, drilling; No. 11 Burleson, drilling at 2,215 feet; No. 12 Burleson, drilling at 2,025 feet; No. 13 Burleson, drilling at 1,505 feet, top of salt at 510 feet; No. 14 Burleson, drilling at 1,210 feet, top of salt at 545 feet; No. 15 Burleson, drilling at 1,495 feet, top of salt at 515 feet; No. 16 Burleson, drilling at 1,550 feet, top of salt at 510 feet; No. 17 Burleson, drilling at 1,680 feet, top of salt at 505 feet; No. 18 Burleson, drilling at 1,540 feet, top of salt at 510 feet; No. 19 Burleson, drilling at 1,120 feet; No. 20 Burleson, drilling at 775 feet, top of salt at 555 feet; No. 21 Burleson, drilling at 275 feet; No. 22 Burleson, drilling at 130 feet; No. 9 Sanger, spudding; No. 10 Sanger, spudding at 165 feet; No. 11 Sanger, spudding at 50 feet; No. 12 Sanger, rigging up; No. 13 Sanger, rig; No. 1-D E. S. Hughes, moving in material; No. 1 T. E. Shirley, location. Marland Oil Co. and Texon Oil & Land Co.'s No. 1 Halff, building rig. Republic Production Co. and Marland Oil Co.'s No. 4 Baker, rigging up. Roxana Petroleum Corp.'s No. 1 B. H. Estep, pay sand at 2,207-50 feet, swabbed 71, 51, 315, 302, 186 and 132 bbls. August 6 to 11 inclusive; No. 2 Della Bowen, drilling at 590 feet, top of salt at 525 feet; No. 1 E. S. Hughes, drilling at 480 feet. Sartain Brothers & Davis' No. 1 Bull, running 10-inch at 745 feet. Skelly Oil Co.'s No. 1 O. P. Jones, drilling at 790 feet. Sun Oil Co.'s No. 1 Burleson, swabbed 30 bbls. at 2,112-67 feet, August 7, then shot with 50 quarts at 2,142-67 feet, plugged back to 2,160 feet to shut off water, now putting on the pump; No. 2 Burleson, swabbed 110 bbls., August 10, and 62 bbls. August 11, at 2,070-2,140 feet; No. 3 Burleson, drilling at 1,335 feet; No. 4 Burleson, spudding at 150 feet; No. 5 Burleson, rig; No. 6 Burleson, rig. Texas Pacific Coal & Oil Co.'s No. 1 Shirk, spudding at 280 feet; No. 2 Shirk, rigging up. The Texas Company's No. 1-C Union Land Co., will plug at 3,082 feet; No. 1 R. King, fishing for tools at 2,060 feet, 200 feet of oil in the hole, swabbed 20 bbls., August 9; No. 3 R. King, drilling at 1,950 feet; No. 4 R. King, drilling at 725 feet, top of salt at 495 feet; No. 5 R. King, shut down at 200 feet; No. 1 A. S. Burleson, rigging up; No. 2 A. S. Burleson, drilling at 1,630 feet.

Val Verde County

A. Blume and others' No. 1 Moore estate, shut down at 2,410 feet. East Del Rio Oil Co.'s No. 1 Russell & Weathersbee, shut down at 2,882 feet. Plateau Oil Co.'s No. 1 B. S. Harrington, set 8-inch casing at 2,450 feet. Independent Operator's No. 1 Whitehead, shut down at 3,340 feet.

Winkler County

Brandon & McCamey and others' No. 1 Kloh & Rumsey, repairing engine at 1,308 feet. R. S. Matthews and others' No. 1 Cowden Cattle Co., Building road. Leigh Taliaferro's No. 1 Sealy, spudded and shut down. Ben Simon, Ladd and others' No. 1 J. W. Amburgey, rigging up. R. A. Westbrook and others' No. 1 T. G. Hendricks, reset 8-inch with two packers 100 feet off bottom, total depth 2,529 feet. Mudding back of 8-inch and 10-inch to put on pump again this week.

Yoakum County

Covey & Klinke and others' No. 1 Hurdle, shut down at 100 feet. Russell & Trunick's No. 1 Hinkle, shut down at 306 feet.

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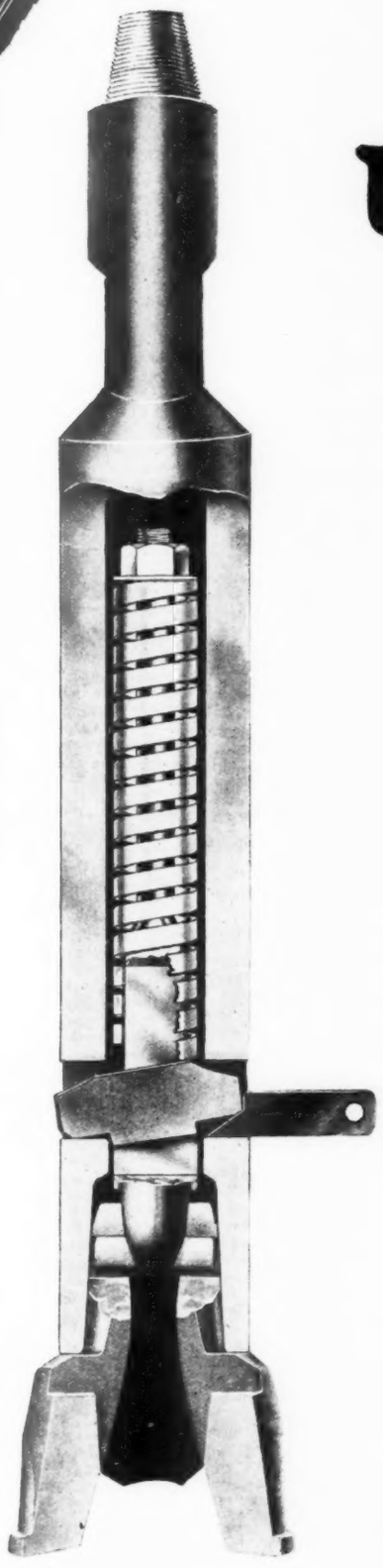

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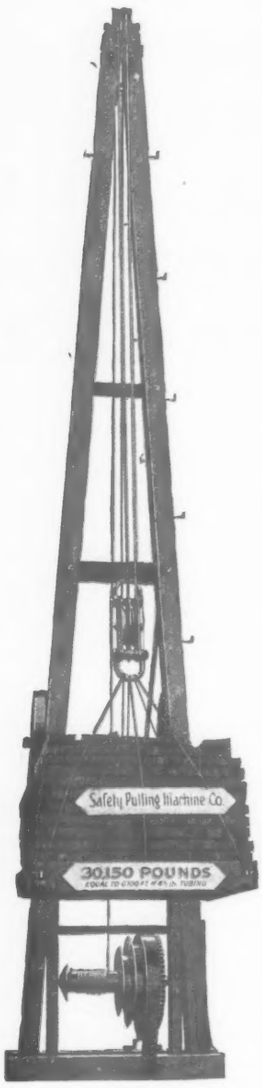

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LAW REGARDING DELAY RENTALS EXPLAINED FOR OIL PRODUCERS

By Lawrence Mills

When, in 1859, the search for, and the production of, pretroleum began, the proven field was very limited and the land that was leased was intended for immediate development. As a consequence, the early leases all provided for the beginning of operations within a few months. There was no provision authorizing the deferring of development by the payment of rental. But the expansion of the business soon led the operators to secure leases upon lands, which were not known to be productive, but were thought to have a potential value, in exactly the same manner as the companies checkerboard an area at the present time. These leases were not obtained for immediate development but were intended to be held pending the testing of the territory.

This practice necessitated a modification of the drilling clause, whereby the lessee was privileged to defer the drilling of the first well, upon the payment of a stipulated yearly sum, called the rental. While the word rental is borrowed from the law of landlord and tenant, such periodical sums are not rent in the sense in which that term is ordinarily used. They are not profits arising from the land, nor are they paid for the use of the land. They are a recompense paid to the owner for the privilege of deferring the drilling of the exploratory well by the lessee.

Forfeiture of Lease

Unless the lease specifically provides that the well required to be drilled within a certain time, may be deferred by the payment of rental, the tender of the rental, in lieu of drilling, will not prevent a forfeiture for failure to drill. Most modern leases, however, provide either in the "or" or "unless" form that the drilling of the initial well may be deferred by the payment of rental. When such provision is present, except in Kentucky and Indiana, the lessee may, by the payment of rental, postpone the drilling of the first well during the entire fixed term, without breaching either the express or implied covenants of the lease.

In Kentucky, and apparently in Indiana also, the rule has been established that, notwithstanding a provision in the lease for the payment of rental, the lessor may refuse to receive the rental, and demand the drilling of a well, within a reasonable time. The lessor, however, is not made the judge of what is reasonable, and the time to begin, specified in the notice, is not conclusive. But, if the lessor receives the rental, he is bound for the period for which it was paid and cannot demand the drilling of the well during that time. In 1920, by statute, the rule in Kentucky was changed to conform to that which obtains in the other states, at least as to leases executed after its passage.

When there is no provision in the lease, upon the subject of testing the premises, the law implies a covenant that that a well will be drilled within a reasonable time. If the first well is dry, the lessee must, within a reasonable time, proceed to drill another one. All of the modern forms of leases provide when the first well shall be drilled, or postponed by payment of rental, usually within one year, but in none is there an agreement as to when the second shall be drilled in the event the first shall be a dry hole. As the payment of rental is in lieu of drilling the well specified in the lease, it is apparent that, unless the situation is provided for where the first well is dry, the lessee is obligated, under the implied covenant, to proceed to drill another one, and that he cannot defer it by payment of rental.

Where Well Is Dry

In order to cover the condition presented where the first well is dry, one of two general forms of provisions are usually inserted in the lease. One of the clauses in general use is substantially in this language: "And it is further agreed that the completion of the well shall be and operate as a full liquidation of all rentals, under this provision, during the remainder of the term of this lease."

Although, strictly speaking, under this form, the obligation would seem to be for the drilling of another well, and not for the further payment of rental, which covered only the deferring of the drilling of the first well, it is generally held, although there are decisions to the contrary, that the lease may be retained, during the term, without further drilling or payment of rental. The "completion" of a well, within the meaning of such provision, is the drilling into the stratum usually productive in the neighborhood, although dry, or, in the case of wildcat territory which has no known productive horizon, to a depth that reasonably exhausts the probability of obtaining production.

The other form provides for the payment of rental for the deferring of the drilling of the second well, exactly as in the case of the first. The clause in the Producer's 88, and in the Mid-Continent 88 is of this class. The language of the former is as follows:

"Should the first well on the above described premises be a dry hole, in that event if a second well is not commenced on said land within 12 months from the expiration of the last rental period for which rental has been paid, this lease shall terminate as to both parties, unless the lessee on or before the expiration of said 12 months shall resume the payment of rentals, in the same amount and in the same manner as hereinbefore provided."

The payment of rental, under this provision, obviates the necessity of further exploration and enables the lessee to postpone further drilling during the fixed, or primary, term.

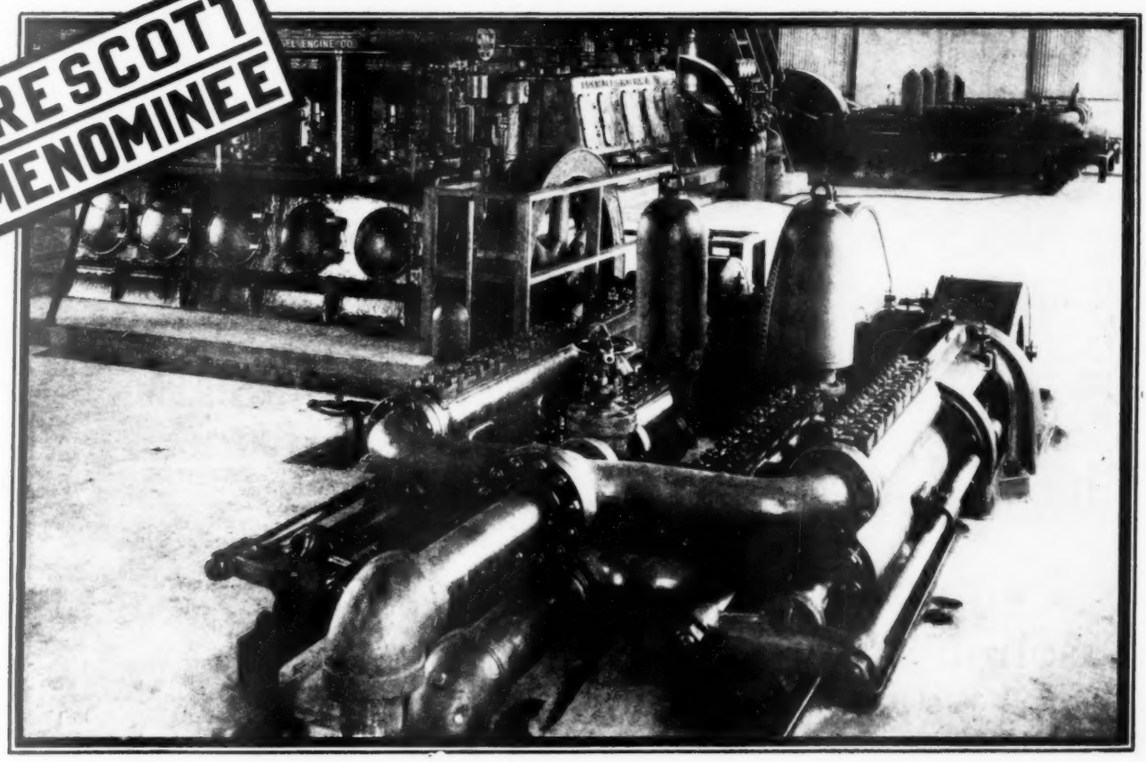
Credit for Rental

It will be observed that after the payment of the first rental, the drilling of the well credits the lessee with one year's rental. He must resume the payment within one year from the expiration of the last period for which rental has been paid. It is not clear, however, that it would have that effect, if the well was drilled during the first year before the payment of any rental. The delay is not a part of the consideration paid for the lease. There is no obligation to drill during the first year, and consequently nothing is due the lessor for deferring the drilling during that period. If there has been no rental paid, then the drilling of the well cannot operate to extend the time for the second 12 months "from the expiration of the last rental period for which rental has been paid." Under such circumstances, it would seem that the lessee must pay the rental within 12 months from the date of the lease, as if no well had been drilled.

We have discussed the effect of the payment of rental. We will now consider the manner of payment and the person to whom it should be made. When the rental is accepted by the lessor, it is immaterial how the payment is made, but when the tender is not accepted, it is of the utmost importance to the lessee that the tender be made in accordance with the rules of law.

A tender of rental in order to be good must be in actual money; a tender by check or draft is not sufficient. But the lessor may waive the objection to the form of the offer. A refusal of the tender upon definite grounds is a waiver of all other objections that might be urged. Consequently, a refusal by the lessor to accept payment by check or draft upon any grounds, other than the form in which it is offered, is a waiver of that objection, and he will not thereafter be permitted to object that the tender was not made in money. It has also been held that if the lessor objects to the payment by check, or draft, it is his duty to signify his objection in order to permit the lessee to make a legal tender before the expiration of the time.

Most modern leases provide that the rental may be paid to the credit of the



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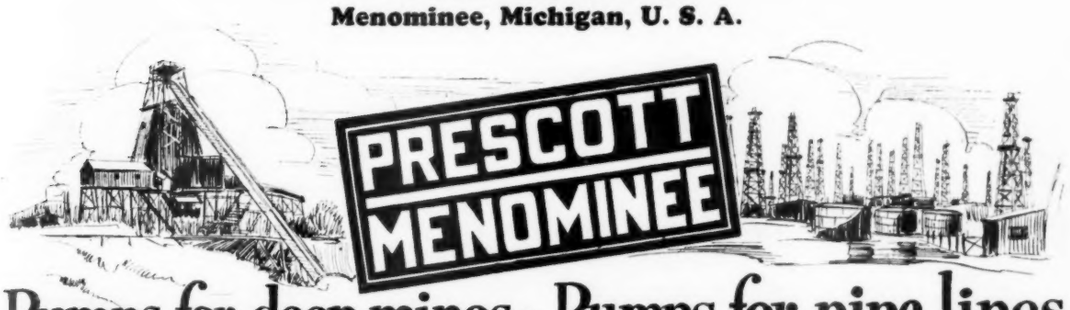

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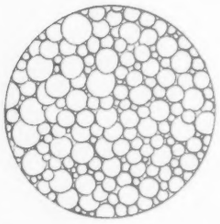

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lessor in some designated bank. The parties have an undoubted right to stipulate how the rental may be paid, and a payment to the designated depository, in accordance with the provisions of the lease, is a payment to the lessor himself. He cannot avoid the effect of the payment by refusing to accept the deposit to his credit. Nor is the lessor concerned with the manner in which the credit to his account in the bank is handled, as between the lessee and the bank. If the money is subject to his unconditional order, within the time stipulated, the rental is paid. But there must be an actual transfer of credit to the lessor. Mere instructions to the bank to pay the rental, where the obligation is not assumed, is not sufficient. And where the lessee undertakes to make payment to the bank, by check or draft, he takes the chance of its acceptance by the bank.

In Case of Sale

Where there has been no sale of the land, or the royalty, the delay rentals are payable to the lessor. Where there has been such a sale, ordinarily, the right to receive the rentals goes with the land, and is payable to the grantee, depending of course, upon the terms of the grant. In order to eliminate the question of constructive notice of the sale of the land or the royalty, which is imparted by recording the deed, it is customary to insert in the lease a provision substantially like the clause in the Producers 88 form, as follows: "But no change in the ownership of the land, or assignment of rents or royalties, shall be binding upon the lessee until after the lessee has been furnished with a written transfer or assignment, or a true copy thereof." In the absence of such written notice, the lessee is justified in paying the rental to the original lessor.

The rental is an entirety and pertains to the lease as a whole. The lessee cannot pay rental upon part of an undivided lease, all of which he owns, and decline to pay them upon the balance. He must pay on all or none. Likewise, in the absence of a provision of the lease permitting it, upon the assignment of a part of the lease, the payment of rental upon the part assigned will not protect it from forfeiture, if default is made in the payment of the balance. Practically all modern leases, however, provide that in the case of assignment of part, a proportionate payment may be made upon that part.

There remains to be considered the liability of the lessee for the rental. Under the form of lease first devised, and which is still in general use, the lessee unconditionally covenanted to drill the well, within a certain time, or to pay the rental for delay. From its alternative obligation to do the one or the other, this form has come to be known as the "or" lease. Many leases were taken in territory which was subsequently condemned by other other drilling in the neighborhood. These leases all contained forfeiture clauses, and the lessees, after the area was condemned, simply omitted to pay the rental, under the belief that the lease was automatically terminated by the failure to pay. But the courts held, from the first, that the forfeiture provision was for the benefit of the lessor, not the lessee, and that upon default by the lessee, he had the option either to declare the lease at an end, or to treat it as still in force and to sue for the rentals during the term of the lease, or until the well was drilled. As a consequence, many suits were filed against the lessees and judgments obtained covering rentals, in some cases, extending over many years.

Liability for Rentals

In order to escape such liability for rentals, in the future, where the lessee neither desired to drill the well, or to hold the lease by payment of rental, two expedients were invented. One was the insertion in the lease of what is known as the Surrender Clause. This clause authorizes the lessee to surrender the lease to the lessor, at any time, by the payment of a sum of money, usually $1. All modern forms of "or" leases contain the surrender clause. When the lessee desires to surrender the lease, prior to the expiration of the fixed term, he may escape all liability for rentals subsequently accruing, by surrendering it, in accordance with the terms of the lease.

Another contrivance for escaping liability for rentals, when the lessee did not desire to keep the lease in force, was the invention of the so-called "unless" lease. This lease is practically identical with the "or" lease, except that it skillfully avoids the undertaking to drill the well, or to pay the rental for delay. The lease is taken for a fixed term, as in the "or" form. It is then provided that if the lessee does not drill the well within a stipulated time, the lease shall terminate, unless the lessee pay the rental. It will be seen that the lessee has the same option to keep the lease in force by the payment of rental, as in the other form, but he nowhere agrees to drill the well, or to pay the rental for delay. The Producer's 88 is a form of the "unless" lease.

It may be well to add that in practically all of the states, the lessee, in an "or" lease, is liable for the payment of rentals to the lessor, during the fixed term of the lease, unless he drills the well, or surrenders the lease, under the Surrender Clause. By a surrender of the lease, under that provision, he cannot relieve himself of liability for rentals already accrued, but he can avoid any further obligation to pay them. The courts, however, hold the lessee to a strict compliance with the Surrender Clause; he must surrender it in the manner provided in the lease. In the "unless" lease, the lessee is not liable for the rentals. He may pay them, or not, as he pleases. If they are not paid, at the time stipulated, the lease, ipso facto, terminates. If they are paid, it remains in force. In this form of lease there is no purpose to be served by the surrender clause and it is very rarely inserted. The Mid-Continent 88, however, which is an "unless" lease, contains it.

DETERDING GUEST OF TEAGLE AT A DINNER

NEW YORK, Aug. 21. — Walter C. Teagle, president of the Standard Oil Co. of New Jersey, was host at a private dinner given at the University Club recently to Sir Henry W. A. Deterding, general managing director of the Royal Dutch Petroleum Co. and moving spirit in the Royal Dutch petroleum enterprise, which is the principal competitor of the Standard Oil interests in the oil business of the world.

The dinner which Mr. Teagle gave was attended by officials of the Standard Oil Co. of New York, The Texas Company and other large American companies. The guests numbered 23.

Representatives of the Standard of New Jersey explained that the dinner was purely social and had no business significance.

Sir Henry sailed on the Berengaria for Europe. He was in New York only a few days.

BYLES SUCCEEDS SHOUP

SAN FRANCISCO, Calif., Aug. 21.—Paul Shoup, in announcing his resignation as president and chairman of Associated Oil in favor of Axtell Byles as president and William Humphrey as chairman, says:

"The organization of Associated Oil Co. will not be further affected by the change in presidency. I am retiring because the increase in railroad duties some time ago made it desirable that I should relinquish my work with Associated Oil as soon as certain adjustments incident to its new association with Tide Water Associated could be made. But this will not affect the policies of the company or the personnel of the operating staff."

Mr. Humphrey is chief counsel of Associated Oil in San Francisco and Mr. Byles is president of Tide Water.

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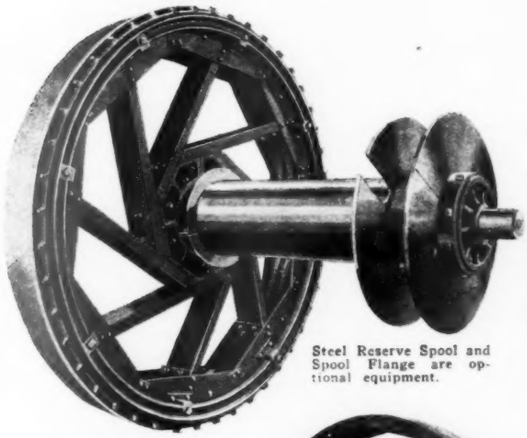

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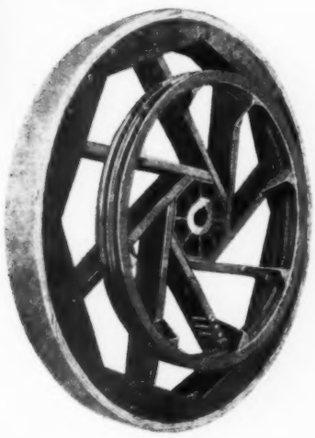

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GEOLOGY AND STRUCTURE OF LOS ANGELES BASIN

(Continued from Page 84)

2,700 feet of coarse massive sandstones.[2] These sandstones are not uncommonly conglomeratic. Certain less massive phases are separated by layers of argillaceous shales. The rocks are soft, massive and coarse in the Santa Ana Mountains on the east and become finer grained and harder southwestward in the San Joaquin Hills, due to mechanical sorting and cementing. White and gray colors in the southeastern part of the basin change northwest in the Santa Monica Mountains to reddish brown and buff. In the latter locality the formation, as mapped, may include younger beds which are in part equivalent to the Topanga formation farther west.

A generalized stratigraphic column for Los Angeles Basin is presented in Table 1.

TABLE 1—STRATIGRAPHY COLUMN, LOS ANGELES BASIN

Geologic Age	Formation		Thick'ess	Lithology
Recent				Alluvium and terrace materials
				Unconformity
Pleistocene	San Pedro Group		*500	—Sands and gravels (partly marine)—
				Unconformity
Pliocene	Fernando group	Saugus formation	*1400	Conglomerates, sands and blue clays (partly marine)
				Unconformity
		Pico formation	*5600	Sands and blue, brown and gray sandy shales. Locally conglomeratic (chiefly marine)
				Unconformity
Miocene	Monterey group	Puente formation	*3200	Diatomaceous shales with local sandstones and thin, brittle, calcareous layers (marine.—Intrusive basalt and diabase.—Heavy-bedded sandstones with interbedded standy, siliceous, and diatomaceous shales, and locally a basal argillaceous lens (marine)
		Vaqueros formation	1000+	Coarse, massive sandstones; locally conglomeratic (chiefly marine)
Oligocene (?)				Unconformity
Pre-Cretaceous				Dark, micaceous schist intruded by granite.

*Plus or minus.

The Vaqueros formation is locally fossiliferous. It is chiefly marine, but upon the eastern border of the basin it grades into multicolored strata probably equivalent to a part of the non-marine Sespe formation of Ventura basin. In the San Joaquin Hills a typical Vaqueros fauna occurs near the top of the formation, indicating that thick, massive sandstones which lie below this are possibly of Oligocene age.

Puente formation (Lower, and possibly Upper, Miocene.)—The Puente formation embraces marine sediments ranging from coarse, heavy-bedded sandstones to the finest diatomaceous shales. It rests conformably upon strata of Vaqueros age and is overlapped unconformably by various horizons of the Fernando group. The formation yields few fossils, and the somewhat fragmental sections exposed show many variations in lithology and thickness, due to the proximity of uplifts, which make correlation difficult.

The type section, as described by Eldridge from the Puente Hills, exposes a lower member of argillaceous and siliceous shales, a middle member of a heavy-bedded sandstones separated by thin siliceous shales, and an upper member composed largely of shales of a diatomaceous and siliceous nature. The lower shale member appears to be a lens due to local conditions of deposition, as it is not certainly recognized elsewhere in the basin.

In the hills just east of Olive and south of the type locality, a large north-dipping monocline furnishes a nearly continuous section of Puente strata 1,600 feet thick which rests upon massive Vaqueros sandstone and is overlapped at various horizons by a basal conglomerate of the Fernando group.

A similar section is exposed east of Newport in the southern part of the basin. Here, however, the formation is finer grained, with its lower members more siliceous and the purer calcareous layers less abundant.

In the city of Los Angeles the entire formation is thicker and more arenaceous, due apparently to near shore conditions caused by the Santa Monica Mountains uplift. The lower portion is over 2,000 feet thick and is composed of heavy-bedded coarse, rusty-weathering sandstones separated by thin layers of predominately sandy and argillaceous shales. The basal strata of this member were considered by Arnold[3] to be possibly of Vaqueros age. Thin-bedded diatomaceous and siliceous shales are present above the lower member, but are here seldom pure, being generally a gray color from an admixture of sand and are interbedded with sandstones.

San Pedro Hills

In the San Pedro Hills, which form an island-like area upon the southwestern side of the basin, distant from any large uplift, the formation is more homogeneous. A limited amount of coarse sandstones occur at the base of the section, but diatomaceous and siliceous shales predominate.

TABLE 2.—SECTION OF PUENTE FORMATION EAST OF OLIVE

	Feet
Argillaceous and poorly bedded diatomaceous shale which fractures concholdally and carries thin limestones in its lower and soft sandstones in its upper portions	400
Soft, pure, and very finely laminated diatomaceous early containing thin, brittle calcareous layers	240
Coarse, heavy-bedded sandstones separated by thin platy shales	360
Thin-bedded arenaceous and diatomaceous shales	250
Heavy-bedded calcareous sandstone	350
	1,600

The exposed Puente sediments are thus seen to vary horizontally, due to differing conditions of deposition. The formation as a whole consists of a thick lower portion of gray rusty heavy-bedded sandstones with interbedded sandy and siliceous shales and locally a basal argillaceous lens; and an upper portion of predominately diatomaceous shales containing thin, brittle, calcareous layers and soft sandstones. East of Olive, and also east of Newport, the upper member locally carries a thin bed of poorly exposed conglomerate which apparently occurs between the underlying pure, fissile diatomaceous shales and the overlying poorly bedded and more argillaceous variety. The conglomerate, together with an apparent overlap at the first-mentioned locality, indicates a possible unconformity near the top of, and within, the formation. This evidence is contra-indicated by a succession of thin, interbedded limestones east of Olive whose sequence appears to be unbroken.

It seems probable that thicker sections than any exposed exist in the deeper portions of the basin, and that diatomaceous shales of the Puente formation have been a source of oil.

Fernando Group—The term "Fernan-

[2]The thicker sections probably include some Oligocene.
[3]Op. cit., p. 103.
[4]Op. cit., p. 145.

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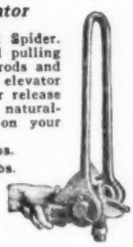

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do" was originally applied by Homer Hamlin[1] to beds above the siliceous shales skirting the sides of the San Fernando Valley, in Los Angeles County. It was subsequently used in southern California by Eldridge, Arnold and Anderson[2], as a term under which to group a great mass of undifferentiated sediments which follow the Monterey and supposedly equivalent series and which end with the severe Pleistocene orogenic disturbance.

As a result of recent detailed mapping, Kew[3] has divided the Fernando sediments at and near the type locality into the Pico and Saugus formations, separated by an unconformity. Both of these formations, together with the unconformity which divides them,[4] are present in Los Angeles Basin.

The Fernando strata of Los Angeles Basin aggregate 7,000 feet of sands, sandy shales, clays and conglomerates which overlap various horizons of the Monterey group, the gap being represented by a long, fairly quiet period of erosion. The most complete sections of the Fernando sediments in the basin occur in the Rapetto Hills east of Los Angeles, and in the Puente Hills just east of Whittier.

Pico Formation (Pliocene[5])—The rocks of the Pico formation are coarse on the northeast and become finer to the southwest, due to increasing distances from the chief source of the sediments. Conglomerates and sandstones upon the northeast grade southwestward into sands and sandy shales as the deeper portions of the basin are approached. Sandy shales and clays increase in volume until southwest of the Newport-Beverly Hills (Inglewood) fault zone the lower portion of the formation is shown by deep wells to have a paucity of porous sands, although thin, impure beds of a sandy nature are logged monotonously.

A fairly complete but poorly exposed and faulted section starts in the Rapetto Hills south of Lincoln Park and continues with offsets eastward to the west quarter corner of Section 34, Township 1s, Range 12w. This section exposes at its base 1,500 feet of thin-bedded sands and shaly sands, predominately yellowish brown in color, but locally gray due to diatomaceous material. Above these is a poorly bedded mass of white and gray shaly sands 600 feet in thickness containing impure diatomaceous layers. These rocks are followed by 3,500 feet of strata which reveal from bottom to top a gradation through first, brown shaly sands containing thin, hard, siliceous shells; second, alternating sands and sandy brown and blue shales; and finally, sands and sandy blue clays. This is the most complete Pico section available in Los Angeles Basin, although a thick, conglomeratic phase occurs just east of Whittier. Strata equivalent to the basal 2,000 feet of the Rapetto Hills section are exposed in the business district of Los Angeles city. They have been described by Arnold (op. cit., p. 150), who listed from them a characteristic Lower Pliocene fauna.

The section given above (which grades eastward into conglomerates) is believed to be representative of the Pico formation in the more central parts of Los Angeles Basin, subject to local variations in lithology and thickness due to mechanical sorting.

Saugus Formation (Upper Pliocene and Lower Pleistocene).—The Saugus formation is apparently everywhere unconformable with underlying strata in Los Angeles Basin, where at different localities it rests upon sediments of Pico, Puente, and possibly even Vaqueros age. It is composed largely of loose, reddish-yellow weathering conglomerates and interbedded soft sands which appear to be of non-marine origin, but in the deeper parts of the basin the lower portion of the formation contains impure and poorly bedded gray sands deposited under marine conditions. A 1,400-foot section is exposed north of Montebello, comprising reddish-yellow weathering conglomerates with interbedded sands and sandy clays. In the San Jose Hills a similar section, which occurs above a Pliocene fauna, is probably to be correlated with this formation.

Although the beds are largely a monotonous succession of conglomerate and sands, the basal members are more or less similar over wide areas in southern California. In the type section of the Fernando sediments in the San Fernando Valley (north of Los Angeles Basin), the Saugus formation has at its base a conglomerate, this being overlain by calcareous reefs which are followed in turn by white and gray sands. In Los Angeles Basin, a somewhat similar succession, which is subject to areal variations, occurs commonly.

The Saugus formation, in common with the Pico strata, becomes finer grained to the southwest, but rarely does it lose its detrital aspect; conglomerates, gravels, and sands with a few sandy clays being prevalent. The formation probably covers the more central and hidden portions of the basin in one continuous sheet, although wells have demonstrated its thickness over the more eroded domes to be slight.

Owing to the large nonmarine nature of the Saugus sediments in Los Angeles Basin, an adequate fauna from them has not been collected by the writer. Their correlation is in little doubt, however, due first to their unconformable position above strata containing known Pico fossils; second, to an apparent local angular discordance with Pico rocks; and third, to their close lithological resemblance to the type section.

San Pedro formation (Pleistocene) and overlying terraces.—The San Pedro sediments were deposited after a Pleistocene orogenic movement which involved all preceding rocks of the basin, and they have therefore, suffered a comparatively slight amount of deformation. The formation name was originally used[1] to designate two locally marine members, but other members are present above these two. This entire group, together with three overlying terraces, and alluvium, covers most of the basin with a thin layer of sediments which hide the lithology and structure of underlying rocks.

Regional Correlations

Geologists of California have not been in entire accord regarding the exact correlation of the Miocene series in different portions of the state. This circumstance has arisen first, through a paucity of fossils in the middle or "Monterey shale" division (which also contains extreme lithologic variations); and secondly, through the effects of local unconformities near the close of the epoch. In Los Angeles Basin the extensive post-Monterey unconformity, believed to be traceable from southern California to Puget Sound, interrupts the Miocene succession and divides the later half of the Tertiary period into two distinct groups of sediments. Those sediments which immediately precede the above-mentioned unconformity are of Lower, and possibly partly Upper,

[1] In unpublished manuscript.

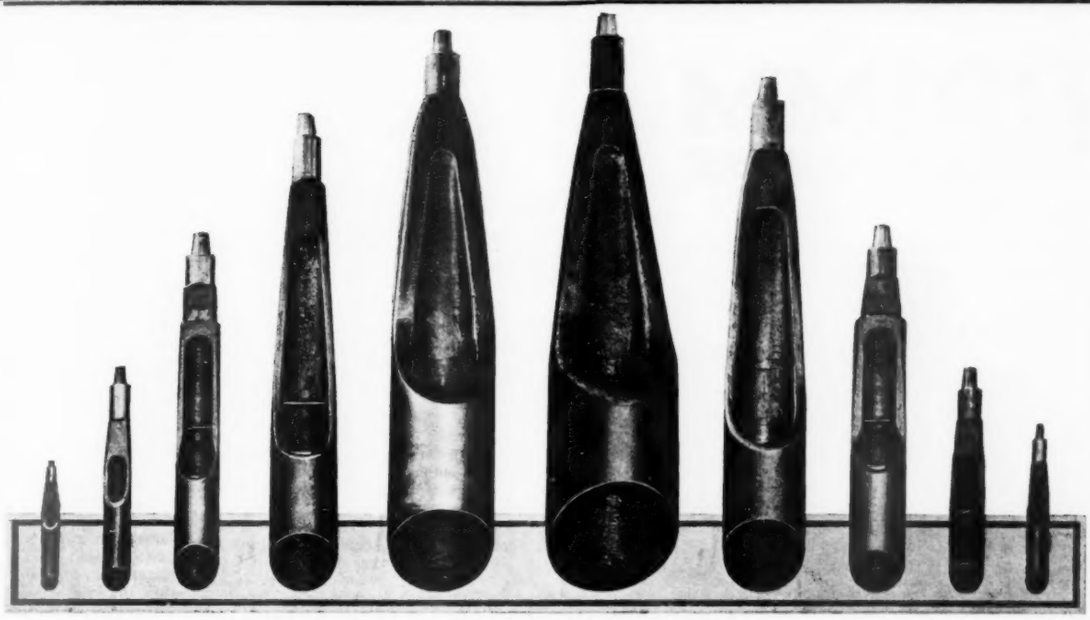
[2] See U. S. Geol. Survey Bulletins 309, 321 and 322, 1907.

[3] William S. W. Kew, "Geology and Oil Resources of a Part of Los Angeles and Ventura Counties, California," U. S. Geol. Survey Bull. 753, 1924, p. 69.

[4] The Fernando sediments have been subjected to considerable erosion over most of southern California. Their most complete section probably occurs northwest of Santa Paula in Ventura County where a large monocline is faulted down between the San Cayetano and South Mountain overthrusts. Sedimentation at this locality appears to have been almost continuous throughout Fernando time, the only break in 18,000+ feet of sediments being a very minor unconformity which marks the Pico-Saugus contact four-fifths of the way above the base of the section. This locality may expose strata which are not present at the type section of the Fernando group, and as the rocks are fossiliferous it seems to be an excellent place to secure a Fernando fauna of maximum range.

[5] A mass of indirect evidence indicates that thin-bedded sands and impure diatomaceous shales occurring below known Lower Pliocene fossils may be of Santa Margarita (Upper Miocene) age. Due to a lack of positive proof, such a correlation is left to the future.

[1] Ralph Arnold, "Paleontology and Stratigraphy of the Marine Pliocene and Pleistocene of San Pedro, California," Cal. Acad. Sci. Mem., Vol III (1903).



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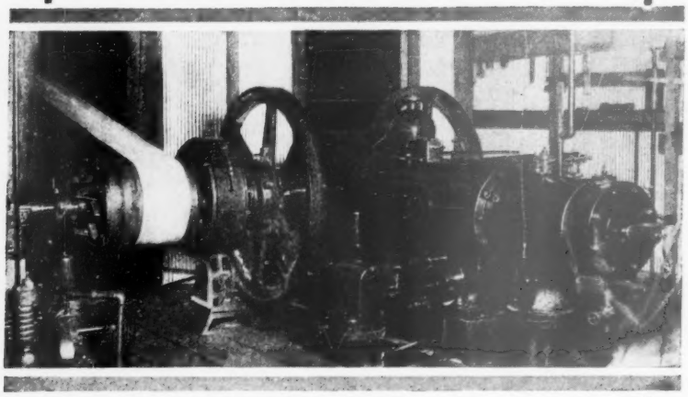

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Miocene age. They have been described under the heading "Monterey group." The Cenozoic sediments which rest upon the post-Monterey unconformity but which precede the severe Pleistocene orogenic movement, are of uppermost Miocene (?), Pliocene, and lower Pleistocene age. They have been described under the heading "Fernando group." The Fernando group in Santa Clara Valley, Los Angeles County, has been divided by Kew* into two formations separated by an unconformity. The uppermost Miocene sediments mentioned, may constitute a smaller third division.

Structure

Los Angeles Basin is a comparatively small and deep depression bordered, in part, upon the north and east by faults whose movements have been predominately vertical. The rather remarkable subsidence which this small area has undergone may be gauged by noting that more than 11,000 feet of Miocene and Pliocene sediments are known, a thickness which represents only the remaining rocks.

The structure of the basin as it pertains to petroleum, bears little direct relationship to the primary system of faulting, but is closely associated with an apparently much later system of fractures that have had both vertical and horizontal throws and which strike from north 35 degrees west to north 65 degrees west, diagonally across the basin. A number of the larger oil pools are so obviously in proximity to the faulting of this system that a close relationship appears to be indisputable. These pools prevailingly occur in lines parallel to long, comparatively straight fractures which trend southeast and northwest, being located upon short anticlinal folds arranged en echelon.

The anticlinal structures along these fractures are apparently a result of predominately horizontal movements in Pliocene and Pleistocene time, these movements having probably been contemporaneous with the general orogenic disturbances which occurred during those epochs in southern California. The theory that the more productive anticlines of Los Angeles Basin were formed as a result of predominately horizontal movement along deep-seated fractures was published by the author[1] in January, 1924, and has since been discussed by other writers.[2] The following description of the Newport-Beverly Hills fault zone is reproduced from the author's article as being representative of conditions in Los Angeles Basin:

"The Newport Beverly Hills fault zone occupies a long and narrow strip extending like a scar from southeast to northwest across the basin. . . . The structure extending from Newport to Beverly Hills is apparently dominated by a line of deep-seated faulting in consolidated rocks, this being evidenced by wells drilled, movements during historic time, and a characteristic topography. The relation of the secondary structure to such deep-seated faulting is demonstrable by simple experiments with plastic substances.[3] Although this faulting is known to reach the surface at certain localities, such surface expressions have relatively little in common with the anticlines along the uplift's strike, being, like these anticlines, secondary to deeper structure.[4] The movements along this zone appear to have been largely horizontal and to have occurred in almost straight lines in rigid material buried at great depth. The result of the . . . attendant drag has been the arranging of the more unconsolidated sediments near the surface into short folds at an angle to the deeper movement and en echelon. . . . This horizontal faulting in the basement rocks . . . is probably the result of crustal adjustments which have resulted in a relative movement of the basin from southeast to northwest along the coast and from northwest to southeast upon the landward side."

The foregoing description, with modifications, applies to other portions of the basin such as the Puente Hills fault zone, but at this locality and elsewhere normal compression is an increasing factor due to the proximity of uplifts. In western Los Angeles city the nearby east-west Santa Monica Mountains uplift has caused the structures of economic importance to assume an approximately parallel position, but even here the Elysian Park anticline strikes northwest to the very base of the mountains.

A tendency of California anticlines to lie en echelon has been noticed by various geologists, and it seems probable that horizontal movements have had a larger role in producing secondary structure than has been suspected.

Topographic Expression of Structure

The structure of Los Angeles Basin is to a large extent outlined by topography. Major faulting is generally represented by escarpments and low elevations in line, but such expressions, in many instances, are so eroded and fragmental that they are not obvious. The productive domal structure discovered to date has been invariably represented by surface elevations, these ranging from the elongated hills at Dominguez and Long Beach, which closely follow subsurface structure, to the low, scattered swells which faintly indicate the doming at Richfield and Huntington Beach.

Surface Indications of Petroleum

Surface indications of oil in Los Angeles Basin locally occur, but these are not particularly impressive compared with other productive districts in California. The largest concentration occurs at the Salt Lake Pool in western Los Angeles city, where a lake covering several acres was formed during Quaternary time by exuding petroleum. A few oil seeps southeast of the Elysian Hills and in the Puente Hills, together with one large seep under the ocean west of Redondo, complete the "live" evidence of petroleum.

An important indication is the commonly bituminous nature of the Puente-Pico contact where exposed. The occurrence of bituminous strata at and near this contact is of wide extent, although the deposits themselves are not ordinarily of large volume.

The central portions of the basin do not at present furnish any surface evidence of petroleum, except possibly gas, due to the enormous protective covering of sediments above the reservoir beds at these localities.

Oil Horizons

The more productive horizons of the domal pools are believed to occur in the basal part of the Pico formation, although less productive zones extend into higher and lower strata. (Figure 2.) These horizons are rarely pure sands, being generally zones containing several hundred feet of alternating thin-bedded shaly sands and sandy shales separated by thin, sticky partings. The productive horizons of those smaller pools which yield chiefly under monoclinal conditions[1] are comparatively pure sands just above or below the Puente-Pico contact.

A series of productive zones totaling 2,000 feet in thickness is not uncommon in pools of Los Angeles Basin, and single wells at Long Beach have produced from this amount of strata. The total production of petroleum in the basin to and

*Op. cit., p. 69.

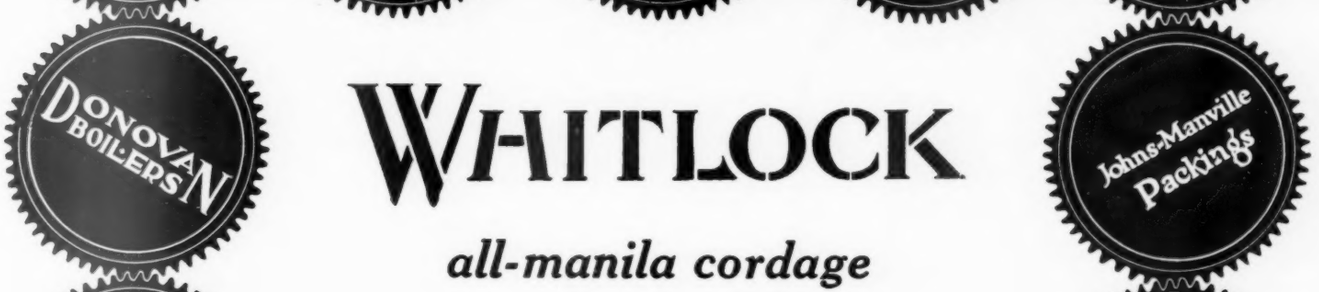
[1]J. E. Eaton, "Structure of Los Angeles Basin and Environs," Oil Age, December, 1923, and January, 1924.

[2]R. N. Ferguson and C. G. Wills, "Dynamics of Oil Field Structure in Southern California," Bull. Amer. Assoc. Petrol. Geol., Vol. 8, No. 5 (September-October, 1924).

[3]Take a glass lantern slide to represent a rigid basement and cut this in half to show a line of shearing. If one entire piece of covering such as tracing cloth is now stuck loosely over the two basement halves, a sliding of these with reference to one another will produce the phenomena described.

[4]See A. E. Fath, "The Origin of the Faults, Anticlines, and Buried 'Granite Ridge' of the Northern Part of the Mid-Continent Oil and Gas Field," U. S. Geol. Survey Prof. Paper 128-C, 1920.

[1]The small Puente oil pool is an exception to the above statement. This is apparently domal, and produces either from the base of the Puente or the top of the Vaqueros formation.



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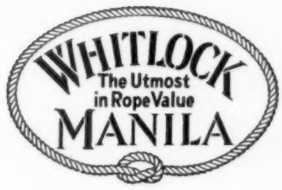

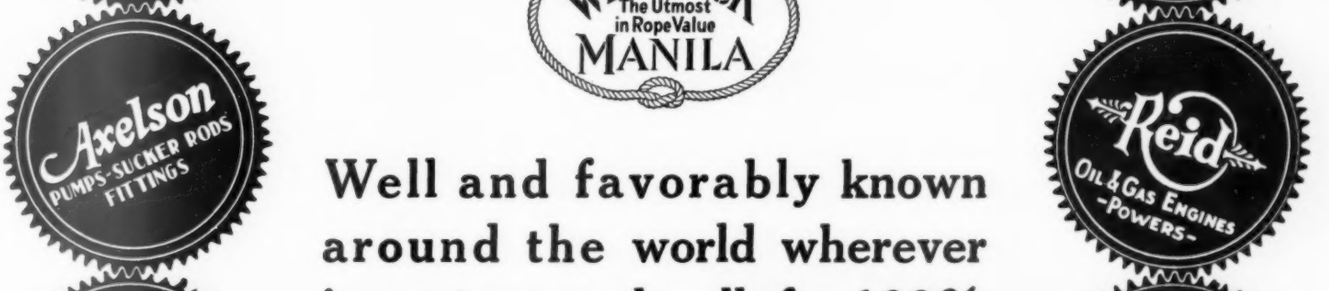

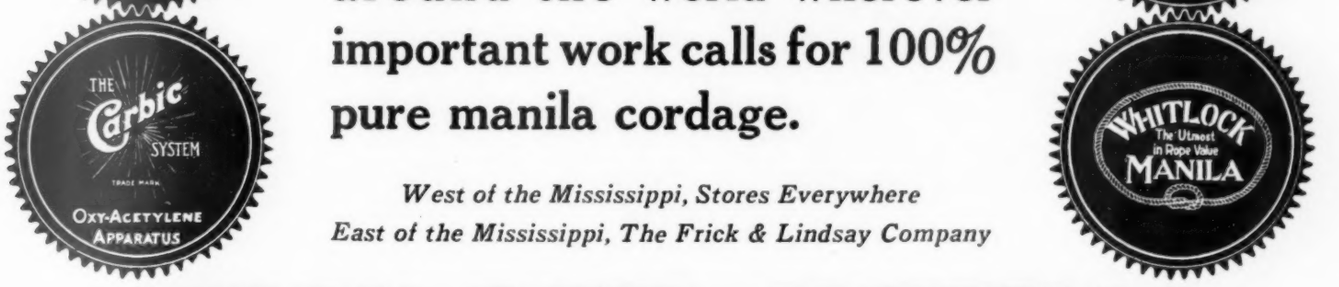

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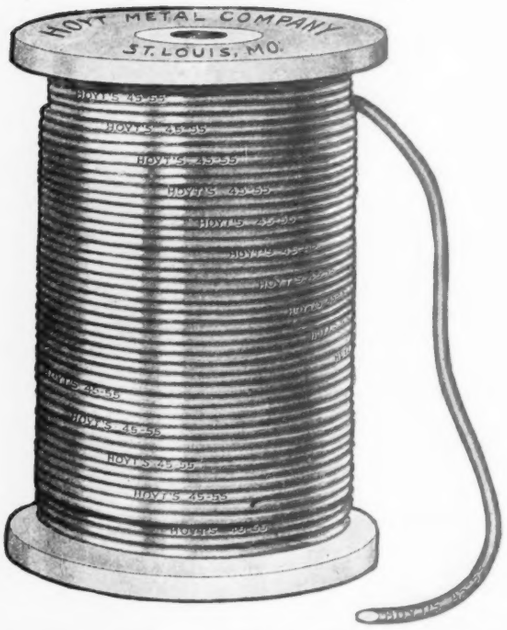

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including August 31, 1925, has been approximately 813,167,000 bbls.

Data on oil production in relation to structure are summarized in Table 3.

GENERALIZED SECTIONS IN THE NORTHERN PART OF THE LOS ANGELES BASIN

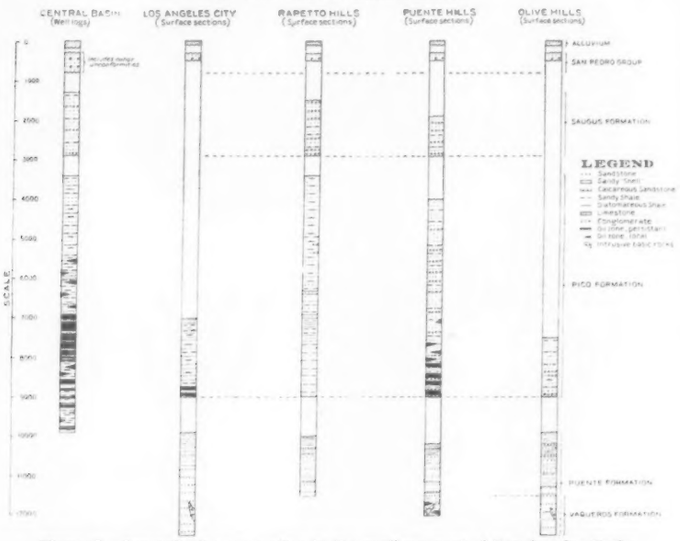

Figure 2.—Generalized cross-section in the northern part of Los Angeles Basin.

TABLE 3
Summary of Los Angeles Basin Oil Pools
(As of August 31, 1925)

Pool	Dominant Structure	Productive Area Acres	Productive Depths Feet	Gravity Baume Degrees	Ttl. Production To Date Barrels
Dominguez	domal	871+	3500-4300	22-32	16,993,623
East Coyote	plunging anticline	1120	2700-4000	14-25	97,873,916
West Coyote	domal	1030	2800-4450	14-30	
Huntington Beach	domal?	2750	2100-5200	14-29	75,890,778
Inglewood	domal	900+	1200-3100	20-25	8,953,900
Long Beach	domal	1160	2400-5900	23-31	174,770,453
Montebello	domal	1201	2100-4700	11-28	61,484,082
Richfield	domal	1104	2700-4500	16-27	33,366,697
Rosecrans	domal	378+	3800-7591	32-43	4,893,720
Santa Fe Springs	domal	1435	3500-4700	28-35	130,019,031
Seal Beach	domal (?)	discovery well	4620	25.3	15,000‡
Beverly Hills	domal	84	2450-2700	12-16	60,035,466
Los Angeles City	monoclinal	110	500-1500	14-19	
Salt Lake	plunging anticline	900	1000-3100	11-22	
Brea-Olinda	monoclinal	1677			
Puente	domal				
Newport	monoclinal(?)	201	900-4450	15-32	107,504,132
Torrance	plunging anticline	4400	800-1400	8-12	43,400‡
Whittier	monoclinal	605	2700-3900	12-27	30,096,017
			600-3300	15-28	11,247,323
Total					813,167,538‡

EXPORTING ARGENTINE FUEL OIL TO URUGUAY

LONDON, Eng., Aug. 10.—The Oil and Color Trades Journal, commenting on the petroleum situation in Argentina, says:

Beyond vague publications of a general nature, the news obtainable in connection with Argentine oilfields continues to be of the most meager nature, says the "Monthly Review" of the Bank of London and South America, Ltd.

In a remarkable interview with a press representative, the Chief of Staff of the Navy, referring to a recent visit to Comodoro Rivadavia, painted a wonderful picture of the growth and progress of the neighborhood—today, it would appear, a veritable beehive of industry, with its close upon 300 wells extending over vast areas and its thousands of organized workmen, presumably prosperous and contented, since apparently the official administration has sought to provide the workers in this industrial center with every conceivable modern comfort. Of the actual exploitation, however, and of the results obtained, either by official or private enterprise, little transpires, and, excellent as may be the reasons for this reserve, the result, to the country in general, is extremely disconcerting.

An instance of the general bewilderment has been afforded by the news made public by the Ministry of Agriculture that in an official tender made for the delivery of 49,000 tons of mineral oil to certain Uruguayan factories the contract has been secured by Argentina, which had quoted prices lower than those of three powerful enterprises of the United States and Mexico. This will be the first occasion upon which actual exportation of Argentine oil from the official reserves has been effected, and, having regard to the fact that United States and Mexican oil is able to compete advantageously within the Republic with the local production, the operation is, to say the least of it, puzzling. Orders for the construction of further tank vessels have been placed by the Government with the Gironde works associated with the Schneider establishments.

CUTTING INTO RAILROADS

Hale Holden, president, C. B & Q. R. R., expresses the belief that motor transportation will solve short haul problems of railroads, and that private motorists are cutting into passenger business of railroads more than the buses operated by independent transportation companies. He says the Burlington is testing 15 to 20 gasoline motor cars on short branch lines; they are proving satisfactory, especially for freight, and predicts within 10 years these cars will prove significant in transportation; that discontinuance of branch lines paralleled by bus lines, when permission of the Interstate Commerce Commission is granted, will not be a serious financial blow, as many of these lines are now operated at a loss.

TOURISTS PAY MOST OF TAX

About $1,100,000 of the gasoline tax collected annually in Virginia is paid by "foreign" automobilists, according to a traffic check just completed by the State Highway Department. In Virginia at large, 18.5 per cent of the automobiles bear out of State licenses; on the Richmond-Washington road more than 38 per cent of the machines are "foreign."

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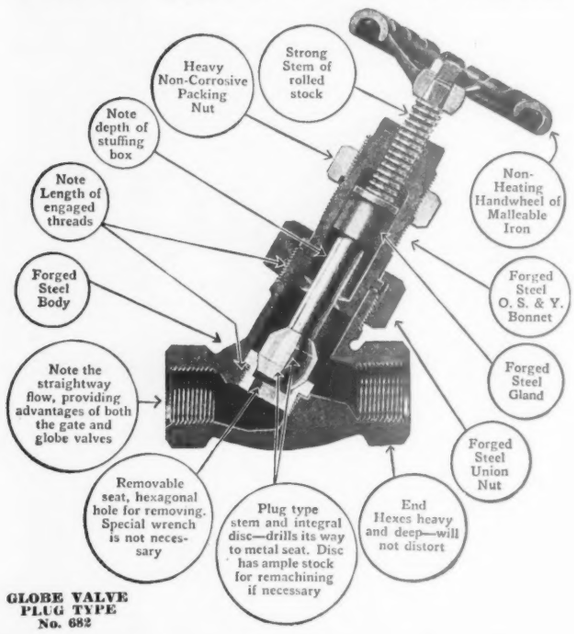
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INCOME TAX BOARD'S DECISION ON DRY WILDCAT DEDUCTIONS

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Aug. 23.—Amounts invested in oil leases in wildcat territory, which became worthless during the taxable year as the result of the sinking of dry wells, are deductible as losses from gross income, according to a decision rendered by the United States Board of Tax Appeals in the case of an appeal of A. L. Huey.

The commissioner disallowed one deduction on the ground that there was no evidence that the leases upon which the taxpayer claims the deduction of losses for the year 1920, had terminated or had been cancelled during that year. In another case the taxpayer had given the lease away without compensation believing it to be worthless. The board took the view that the taxpayer did not intend to and did not give away a thing of value, and that investment was accepted by the board as a loss which was deductible. The opinion of the Board of Tax Appeals in this case was rendered by Commissioner Smith.

Facts About Leases

The findings of fact showed that in 1920 the taxpayer and A. R. Cotton were partners in the oil business. On January 22, 1920, the partnership through Huey, but without Cotton's knowledge, bought a lease to a 10-acre tract in Tillman County, Texas, from one James R. Robinson, the consideration being $6,000. The taxpayer had a one-half interest in the lease. The lease was in wildcat territory. Huey got an assignment of the lease but never had it recorded. At the time of the purchase a well was being drilled about 1½ miles from the 10-acre tract. This well came in dry within 48 hours after the lease had been purchased. Other wells were drilled within the vicinity of the lease during the early part of 1920. They were all completely dry holes by the middle of 1920.

In the summer of 1920, a well was being drilled to the east of the tract embraced in the lease. The proposition was made to the taxpayer that if he would go in with the driller they would drill the well to a depth of 2,500 feet, which was deeper than any other well in that vicinity. The taxpayer refused to put any more money into prospecting in the immediate neighborhood. He told the person trying to interest him that, rather than put up any more money, he would turn his lease over to him as he considered it worthless; that he had no confidence in that territory and he then and there delivered the lease but without endorsement, to the prospector. To the date of the hearing no productive oil well has ever been drilled in Tillman County.

On February 4, 1920, the taxpayer acquired an interest in a 700-acre oil and gas lease in Clay County, Texas, the consideration for the taxpayer's interest being $3,000 cash. Shortly thereafter the taxpayer acquired an interest in a 200-acre lease adjoining holdings he then held for $2,040 cash. These leases were in wildcat territory. They were acquired from one Rube Scott, who was at the time drilling an offset well. The well was completed dry in June, 1920. Other dry wells were drilled within from 1 to 5 miles of the property during the year 1920. During said year Scott paid certain rentals upon the lease making them good until after the close of the year 1920. Scott charged the taxpayer for a portion of the rental and the taxpayer paid the amount charged against him, although at the time he considered the leases worthless.

In his income tax return for 1920 the taxpayer claimed a deduction from gross income of $8,040 as losses sustained during that year, representing his investment in the three leases above described. The commissioner has disallowed this deduction and such disallowance is the basis of this appeal.

Commissioner's Opinion

Commissioner Smith's opinion follows:

"The Revenue Act of 1918 permits a taxpayer to deuct from gross income in an individual tax return 'losses' sustained during the taxable year and not compensated for by insurance or otherwise, if incurred in trade or business.' Section 214 (a) (4.) The taxpayer claims the right to deduct from gross income certain investments in oil leases in wildcat territory, upon the ground that the leases became worthless during the year 1920, such worthlessness being proven by the fact of wells being drilled during the year coming in 'dry.'

"The commissioner has disallowed the deduction upon the ground that the evidence shows that the leases ran beyond the year 1920; that for some years the leases ran trom three to five years and that there is no evidence that the leases upon which the taxpayer claims the deduction of losses for the year 1920 had terminated or been cancelled during the year 1920. The commissioner furthermore contends that the wells which were drilled were at least a half mile away from the Tillman County lease and that in some instances a dry well a half mile from a leased tract does not prove that a well driven upon the tract might not be productive; that the fact that the wells came in dry was no indication that there was no oil in the tract covered by the lease; furthermore, that the leases had not been cancelled by December 31, 1920, and that the Tillman County lease was given away by the taxpayer in 1920 and that no loss can be claimed in respect of a gift.

Undoubtedly a Loss

"Taking up first the Tillman County lease, it is to be noted that Cotton had information at the time Huey purchased the lease that the Sheegog well, which was being driven at the time, had reached water sand and not oil-bearing sand. As soon as he learned of the investment made by Huey in the lease, he advised him that the lease was worthless, and within 48 hours after the purchase both parties came to the conclusion that it was worthless. On the ground that it was worthless, Huey delivered it to an individual who wished to drive a well in another locality not far distant from the leased tract. The commissioner takes the position that no loss can be predicated upon this lease for the reason that it was given away. We are of the opinion, however, that the taxpayer did not intend to and did not give away a thing of value. In our opinion the lease was proven to be worthless at the time that the taxpayer delivered it to the driller of the well to the east. We cannot doubt that the lease had been proven to be worthless at that time. The investment by the taxpayer in the lease was undoubtedly a loss sustained during the year 1920.

Royalties a Factor

"With respect to the taxpayer's investment in the two leases in Clay County, Texas, it is to be noted that they continued as valid and subsisting leases at December 31, 1920. These leases were upon a tract of land containing approximately 900 acres. One well had been driven upon the property within from 1 to 5 miles of the property. Scott, however, appears to have had some hope during the year 1920 that oil and gas would be found upon the leased premises and that the leases might become valuable. At any rate, he saw fit to pay minimum royalties upon the land and to charge the taxpayer with his prorata share of those royalties. In view of this fact we are not satisfied that the taxpayer sustained a loss deductible from gross income in respect of the leases during the year 1920."

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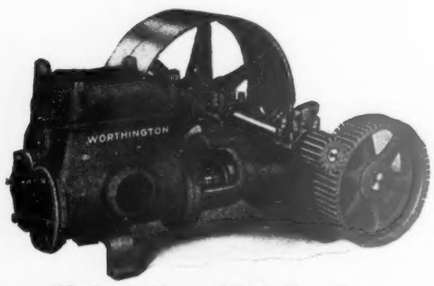

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MICHIGAN FIELDS

(Continued from Page 62)

in the Berea and the Saginaw sands, but is being pushed rapidly toward the Dundee sand, which is expected to be stuck around the 3,000-foot mark. At last report, it had reached a depth of 2,899 feet and was expected to strike the Dundee within a few days. The other is the Pagel well of J. H. Shaltry and others. This makes at least four wells that should reach the sands during the week.

The Saginaw Building Co. is shut down at its test on the Householder farm, awaiting a special fishing tool to be used in an effort to recover tools stuck in the Marshall sand at about 670 feet. This well is in Section 12, Carrollton Township, half a mile northeast of the Sun Oil Co.'s well on the Weiss farm.

The Ohio Fuel Corp. is starting its second well on the Ernest Fisher farm, Section 11, Saginaw Township. The No. 1 on this farm is the farthest north producer in the field and the Ohio Oil Co.'s the farthest to the east, while the Bliss Petroleum Co.'s well on the Fred Engle farm, is the farthest to the west. The distance from the Engle to the Ohio well east and west is close to 2 miles.

Tests to the North

The Sun Oil Co. is rigging up for two test wells to the north. One is on the Doctor Bradshaw farm, being the south half of the south half of the northeast quarter of Section 10, half a mile northwest of its well on the Weiss farm and almost an offset to the Ohio Fuel Corp.'s producing well on the Ernest Fisher farm, and also rigging up for a well on the C. J. Robe farm, near the center of Section 11, also made a location for a test on the William Scherzar farm, a short distance south of the Robe location. Same company expects in a few days to move the tools from its No. 1, on the John Schonteit farm to a location for No. 3 and the tools from No. 2, same farm, to No. 4 location.

Jack Hendricks and others, drilling the Gehringer well across the line in Bay County, announce that a standard rig has been ordered for the drilling of a well on a property at Oak Street and Michigan Avenue, within the city limits of Saginaw. S. M. Bacon and others are putting up a rig on the Busheau property on Maple Street, in Carrollton Township.

Casing is being run in the Bliss Petroleum Co.'s No. 2 well, on the Casper Ulrich farm, Section 14, at along 1,000 feet. No. 3, same farm, is under way and No. 4 has been located.

The Valley Oil & Gas Co. struck the top of the Marshall sand at No. 1 on the Priess, near Michigan Avenue and Madison Street, in Carrollton Township, at 603 feet, and when at a depth of 648 feet the bailer was lost, which means a fishing job.

The well being drilled by the Brown City Prospecting Co., on the King Road, near Bridgeport, in Bridgeport Township, Saginaw County, and the farthest test drilling to the southeast, has reached a depth around 500 feet. The well of S. M. Bacon and others, on the George Judd farm, Section 12, Taymouth Township, and near Blackmar, is again drilling around 350 feet after experiencing considerable difficulty with quicksand and boulders. Ninety-six feet of drive pipe was landed after overcoming the obstacles.

Leasing Activities

Leasing continues active not alone in Saginaw County, but in Bay and Midland Counties.

D. E. Hughes, trustee, has secured leases on eight blocks in Buena Vista Township, comprising 82 acres and three lots in Saginaw Township.

Florence Doxtator of Detroit secured a lease on the G. H. and Anna Brunner property, comprising 25.76 acres in Saginaw Township. The Superior Oil Co. leased four lots in the Shaw & Merrill Addition to the city of Saginaw owned by John and Jane King.

Anson H. Russell, well known oil operator of Cleveland, Ohio, secured a lease on the six lots of the Empire Salt Co. plat in Carrollton Township, the lots include about 24 acres.

The Sun Oil Co. secured a lease on the George F. and Beatrice Williams 80 acres in St. Charles Township.

C. A. Smith, Jr., of Chester, W. Va., has leased the L. and F. Crites 70 acres; O. and M. Taggart, 20 acres; I. and E. Dennis, 80 acres; W. and A. Vincent, 80 acres, in Brant Township, and the George E. Murphy 80 acres and I. P. Wilson 74 acres in St. Charles Township, making a total acreage of 408 acres in the two townships.

R. G. Bower and William Bain secured a lease on the John and Alice Emerson 80 acres, in Thomas Township. Herman J. Sears, trustee, filed a lease on the 20 acres of Paul and Augusta Neuenfeldt farm, located in Thomas Township, Saginaw County and Ingersoll Township, Midland County.

F. W. Muehlenbeck and W. R. Crowley filed a lease on Lots 15 and 16, of the Anna F. McEwen Addition to the city of Saginaw, owned by Herman A. and Helen G. Heilman.

Dr. C. C. Bush filed four leases covering 300 acres in Brant Township, Saginaw County. Cecil A. Baskin filed a lease on six lots in the Union Park Subdivision. William C. Mertz filed two leases. One was on 10 lots in Carrollton Township, and the other on eight lots in the Union Park Subdivision.

Otto Schupp filed leases on about 60 acres on and near the main bank of the Saginaw River, adjacent to Crow Island, owned by John and Annie O'Gorman of Toronto. Dr. P. L. Jones filed 16 leases on lands in Brant, Carrollton and Marion Townships, comprising a total of 1,491 acres, while Worth D. Bergher filed one of 28 acres on the Landon farm, in Carrollton Township.

CENTRAL WEST FIELD

(Continued from Page 62)

good for 20 bbls., and starting No. 8, same farm, as well as starting a test on the Edward Luginbill 129 acres, Section 20, same township. In the same area, George S. Lacknett's second well on the H. A. Sipe 40 acres, Section 27, is reported as good for 25 bbls. initial production. The new Berne Field now has 23 producing wells with a number of wells drilling and many locations staked out that will be started as soon as drilling tools can be secured.

In southwestern Indiana, Center Township, Gibson County, the Ohio Oil Co.'s test, 990 feet from the north line and 330 feet from the east line of the A. J. Mans farm, in the northwest quarter of Section 16, proved a duster at a depth of 1,453 feet.

Dedicatory Service

In Logan Township, Pike County, J. Morsey and others' second well in the southeast corner of the William Miley farm, in the northeast quarter of Section 14, is reported a 12-bbl. producer. Sand was topped at 1,387 feet and drilled 39 feet in the sand. It was on a corner of the William Miley farm, that recently the best well found in the Miley Pool was drilled upon the lot of the Olive Branch Church. Last Sunday the oil well on the property of the Olive Branch Church in Pike County was dedicated to the extension of the Kingdom of God by Dr. J. B. Miller at the close of the homecoming service. There are about 30 members in the congregation. It was a great homecoming of the members and friends of the church. A very impressive part of the day's service was the dedication of the oil well which had just recently been completed. The well is pumping more than 100 bbls. per day and at the present price of oil the church will realize more than $700 per month. It was evident from the spirit of the church that this new income was looked upon as a sacred trust and would be used in the most careful manner.

Other Indiana Wells

In Gill Township, Sullivan County, Fred Bays drilled in a wildcat 450 feet from the north line and 100 feet from the east line of the G. Irwin farm, in the northeast quarter of the northwest quarter of Section 35, getting a gas well

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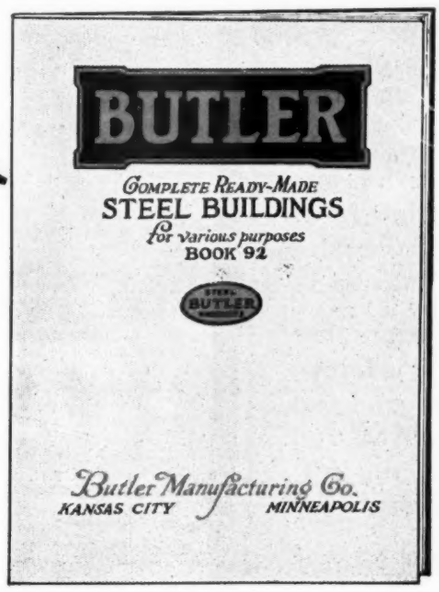

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with a volume of 110,000 feet at a depth of 577 feet. In Turman Township, same county, the Ohio Oil Co.'s No. 12 well near the northwest corner of the W. W. Harris farm, Section 1, is credited with 3 bbls. daily at 752 feet. Same company's No. 26 on the M. J. Baird farm, same section, is another one of those deep sand gas producers around 2,000,000 feet.

Seven miles to the southwest of Terre Haute, in Sugar Creek Township, Vigo County, Welch, Glynn and Gambill have at last completed their wildcat venture on the Nattkemper lands. The well was drilled to a depth of 2,026 feet where an ocean of salt water was encountered and the well abandoned. In Riley Township, same county, and but a mile east of the old Riley Pool of some years ago, E. D. Fagan and others are putting down a test in Section 14.

Southeast of Indianapolis and north of Fairland, just east a short distance from some small oil wells drilled on the Bass farm, in Shelby County, E. R. Donnell has drilled in two light gas wells. In Brandywine Township, same county, and about a mile east of Fairland Indianapolis operators are reported at down over 400 feet in the Trenton Rock in a test on the Elmer Vernon farm. No report has been forthcoming on the test well drilling by L. N. Nicholson on the J. Harshbarger farm, in Van Buren Township, Shelby County. The well on the Vernon farm, struck top of Trenton at 881 feet.

In Johnson County, to the west of Shelby County, south of Indianapolis, and northwest from Franklin, the county seat, the Universal Development Co. lost a string of tools in its first venture at a depth close around 2,000 feet and abandoned the hole and now working at the second test.

The Ohio Oil Co. is reported drilling a wildcat well on the Doctor Franklin farm, west of Shoals, in Martin County. In the same county, the Loogoottee Light & Fuel Co. drilled in a gas well on the Kenner Dilley farm and reported around a volume of 500,000 feet, and drilling No. 2, same farm. This development is not far from the old Loogoottee oil production of years ago.

The Pendleton Natural Gas Co. drilled in a light gas well at a test on the Reason farm, near Pendleton, in Madison County, in the southern part of the county and southwest of Anderson. The Trenton was topped at 884 feet and gas at 12 feet in the sand. Same company is working at a well on the Keesling farm, same area.

Not far from Mooresville, in the northeastern corner of Morgan County, Gilbert Gray and others struck top of Trenton at 1,550 feet and found 485 feet of that formation and at last report was down close to 2,100 feet in what is called the Skakopee limestone in Indiana.

In Monroe County, south of Morgan County and west of Brown County, B. F. Morgan and others are reported to have a rig up for a second test in Polk Township.

Bloomingdale capitalists have drilled a dry hole on the Fellow farm, in Section 16, Reserve Township, Parke County, north of Terre Haute and not far from Bloomingdale.

A gas well is reported completed by James Howes and others on the H. McBride farm, in Boone Township, Harrison County, out from Corydon, in the extreme southern part of Indiana and southwest of New Albany.

In the southern portion of Clark County and between Jeffersonville and Cementville and almost directly north of Louisville, considerable leasing is being done by operators who claim to have found a structure.

Illinois

The best completion for the week in the Illinois Field was the Adams Corner Oil Co.'s No. 1 in the southwest corner of the W. O. Johnson farm, in the northeast quarter of the northwest quarter of Section 6, Wabash Township, Wabash County, northeast of Allendale and northeast a short distance from the discovery well of this rich pool on the Stillwell farm. The top of the sand was struck at 1,344 feet and drilled 40 feet in the sand, the well showing an initial production the first 24 hours of 120 bbls. In the same field the Eastern Gulf Oil Co.'s test, 200 feet from the north line and 500 feet from the east line of the Sallie Compton farm, in the northeast quarter of Section 11, same township, proved to be a duster at a depth of 1,600 feet.

In Casey Township, Clark County, the Arkansas Fuel Oil Co.'s second well in the southeast corner of the A. W. Baker farm, in the southeast quarter of Section 25, pumped 55 bbls. from a depth of 1,598 feet. Holmes and others' No. 4 in the southwest corner of the Charles W. Lowe farm, same section, was a dry hole at 1,390 feet. This well is in the northeast quarter of the section. In Westfield Township, same county, the Ohio Oil Co.'s No. 16 well, 1,000 feet from the south line and 460 feet from the east line of the Hartford Drake farm, pumped 4 bbls. from the shallow pay sand at 540 feet. In Parker Township, the same company's No. 119 well, 1,650 feet from the north line and 550 feet from the east line of the N. and K. Young farm, Section 17, and at Oil Fields on Parker Prairie, pumped but 1 bbl. from the shallow pay at 510 feet.

Thomas Flynn and others struck a gas well with 90 pounds pressure 575 feet from the north line and 550 feet from the east line of the J. P. Sager farm, in Section 29, Montgomery Township, Crawford County, at a depth of 550 feet.

The W. C. McBride, Inc., which owns and operates a large number of producing wells in the Carper sand area of Martinsville Township, Clark County, has taken a block of leases south and west of its present producing territory and will extend the field in that direction. Some 1,400 acres are now under lease in the new block. Most of this acreage is in Sections 1 and 13 Johnson Township. General interest is being manifested in the preliminary work of opening this new area. Two drilling outfits will be used to start the work. One has been placed on the Beasley farm, in the north part of the block and drilling will begin immediately. The other will be placed on the Bennett farm, known as the Norman, Section 13. These wells will be drilled to the Niagara limestone which is expected to be found at around 1,600 feet. The faith the McBride interests have in the new prospective field is indicated by the fact that substantial bonuses were paid for much of this territory, as high as $25 an acre for some of it.

EASTERN FIELDS

(Continued from Page 60)

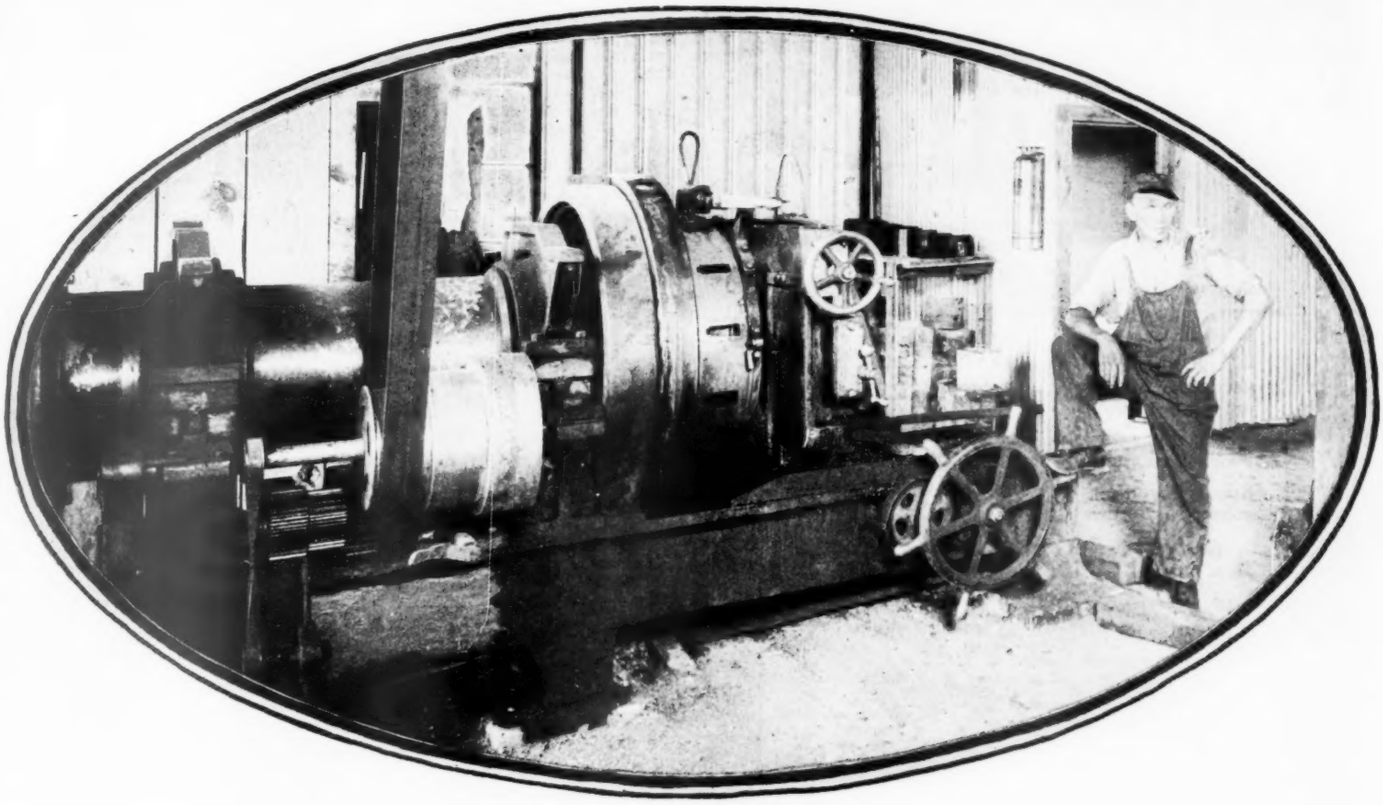
ter of the two is F. M. Rugg & Co.'s No. 8 on the Clinton S. McKinney farm, located in Lot 26, Newton Township, Licking County. The well produced 85 bbls. the first 24 hours after shot. No. 9, on the same farm, is in and good for 30 bbls. a day.

Dry Hole in Athens County

In the Fisher Pool, Section 7, Waterloo Township, Athens County, the Logan Gas Co. has completed in the Berea grit a test on the P. G. Shaulis farm. It is a duster. In Section 5, Hopewell Township, Muskingum County, the Hope Construction Co. is drilling a test on the Frank Varner farm.

In Section 19, Enoch Township, Noble County, Albert P. Scheetz and others have a duster in the stray sand at a test on the Clem Shafer farm. In Seneca Township, the Ohio Fuel Supply Co.'s test on the Sarah Watson farm is a gasser in the Berea grit. In Section 13, Jackson Township, Guernsey County, the same company is drilling in the Niagara lime at a test on the Keifer heirs' farm.

In the deep sand territory, located in the northwest quarter of Section 28, Harrison Township, Perry County, the Leonard Oil & Gas Co. has completed and shot in the Clinton sand a test on the Mary Butts farm. It is good for 45 bbls. a day. In the northeast quarter of Section 16, Fallsbury Township, Licking County, the Ohio Fuel Supply Co. has completed through the Clinton sand a test



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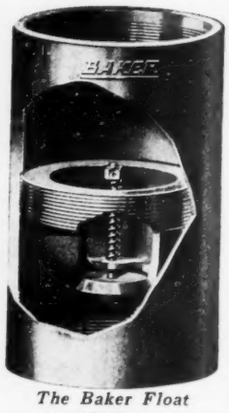

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on the Joseph and Charles Bodle farm. It is a duster and has been plugged and abandoned.

Light Pumpers in Shallow Sand

In the southwest quarter of Section 24, Jefferson Township, Noble County, Joseph Sailing and others have completed in the Germantown sand a test on the Susan Brotton farm. It is not good for more than 2 bbls. a day. One mile east of Chesterhill, Section 8, Marion Township, Morgan County, W. R. Metcalf & Co. have a very light pumper in the first Cow Run sand at No. 29 on the S. H. Scofield farm.

Two miles east of Chesterhill, in Section 2, Marion Township, Morgan County, the Oil City Trust Co. has completed and shot in the first Cow Run sand No. 12 on the T. J. Edgerton farm and showing for 2 bbls. a day.

Athens County

In Section 34, Athens Township, Athens County, Lot 30, inside of the corporate limits of Athens, Gross and others have completed a second test on the State Hospital property, good for 8 bbls. a day in the Berea grit. In Lot 21, same township, Cook and others have a light pumper at a test on the Peter Walsh farm. In Section 34, Alexander Township, Harmon & Co. have a light pumper in the same formation at a test on the John Lax farm. In the same township, Section 24, C. H. Beasley & Co. have completed No. 10 on the W. D. Whaley farm, good for 4 bbls. a day in the Berea grit.

In Section 21, Union Township, Knox County, the Ohio Fuel Supply Co. has completed and shot in the Clinton sand its test on the Lesley Lower lot. It produced 60 bbls. the first 24 hours. In the northeast quarter of Section 11, Rush Creek Township, Fairfield County, Roy Nixon and others have completed a test on the M. Kittle farm. It is a duster in the Berea grit.

Duster in Perry County

In Section 14, Reading Township, Perry County, the Pure Oil Co. has completed in the Clinton sand a test on the Edward Thomas farm. It is a duster at a total depth of 2,600 feet. At Bolin Mills, Section 7, Knox Township, Linton County, Bode & Co. have an 8-bbl. pumper in the Berea grit at a test on the George C. Davis farm.

George Hess & Son's No. 10, on the Martin Rubrake farm, located in Section 36, Jackson Township, Noble County, got no oil and only a little gas in the Berea grit. In the Fisher Pool, Section 22, Alexander Township, Athens County, Cook and others have a gasser in the Maxon sand at a test on the E. Warren farm, good for 1,000,000 feet a day.

In the northeast quarter of Section 26, Monroe Township, Perry County, Keller Brothers & Co. have completed in the Berea grit No. 24 on the George Roberts farm. It is not good for more than 2 bbls. a day. In the southwest quarter of Section 21, Starr Township, Hocking County, the Martens Oil Co.'s test on the J. W. Crawford farm is dry in the Clinton sand and will be abandoned.

Light Gasser in Washington County

In Section 53, Salem Township, Washington County, W. C. Patterson and others have completed in the Macksburg 500-foot sand No. 5 on the George Schmidt farm. It is a light gasser in the formation named. No oil was developed at this location.

Way Wickens and others have completed No. 7 on the W. D. Harper farm, located in the northwest quarter of Section 20, Enoch Township, Noble County. It is a very light pumper in the Buell Run sand. In Section 9, Lawrence Township, Washington County, the Braden Oil Co. and Dupy Brothers have started to drill a second test on the Harry Felter farm. In Section 22, Alexander Township, Athens County, Cook and others are drilling a test on the Lester Cordray farm.

New Work

In Lot 30, Athens Township, Athens County, the Athens State Oil & Gas Co. is drilling another test on the Ohio State lands. In Section 17, Rush Creek Township, Fairfield County, A. D. Hufford and others have started to drill a test on the J. C. Shaw farm.

West Virginia

Henry district, Clay County, is furnishing more completions than any other district in West Virginia. The size of the late completions range from 10 to 75 bbls. a day. Inside of the present defined limits no dusters have been encountered and the production for some weeks steadily increasing.

The South Penn Oil Co. has completed and shot in the Big Injun sand No. 10 on the R. S. Kyle farm. It is smaller than the average and not good for more than 10 bbls. a day.

On Big Sandy Creek, Big Sandy district, Kanawha County, the United Fuel Gas Co. has completed No. 1 on the C. H. Osborne farm. It is a gasser in the Big Injun sand, good for 138,000 feet. On the same stream and in the same district, the same company's test on the Lewis Woods farm is a gasser in the same formation, good for 414,000 feet. On the Little Kanawha River, Center district, Calhoun County, W. H. and Lewis Bickel have completed in the Big Injun sand No. 7 on the Stump heirs' farm. It is a duster.

In Lee district, Godfrey L. Cabot has started to drill a test on the William P. Price farm. In Geary district, Roane County, the United Fuel Gas Co. is building a rig on the D. C. Taylor heirs' farm. In Church district, Wetzel County, the Maple Pitt Fuel Co. has started to drill on the J. H. Memerlick farm. In the same district, the Francis Oil & Gas Trust Co. has made a location on the Maud Six farm.

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is due in the Gordon sand at a test on the Baldwin Calvert farm. In the same district, the same company has a rig up on the D. W. Keller farm. Edmund Conway and others have a rig completed on the Mary Campbell farm.

In Geary district, Roane County, the United Fuel Gas Co. drilled a test on the J. M. Elmore farm into the Big Injun sand. It is a gasser. In Liberty district, Marshall County, L. F. Burley & Co. have completed a test on the Mally-Newman farm. It is a gasser in the same formation.

Dusters in Doddridge County

In West Union district, Doddridge County, G. H. and J. E. Trainer have drilled a test on the Frank Smith farm through the Big Injun sand. It is a duster. In the same district, the Hope Natural Gas Co. had the same luck when it drilled a second test on the Thomas J. Smith farm through the Gordon sand.

In Grant district, Ritchie County, the Continental Oil Co. has completed in the Squaw sand a test on the N. T. Mason farm good for 10 bbls. a day. In Union district, Tyler County, Dr. George T. Gale has drilled deeper his No. 10 on the Sarah D. Thistle farm and it is good for 8 bbls. a day in the Maxon sand. In Church district, Wetzel County, the Pure Oil Co. has completed a test on the Winono Shough farm. It is a gasser in the Gordon sand.

On Little Paw Paw Creek, Paw Paw district, Marion County, the Owens Bottle & Machine Co.'s No. 1 on the Charles Toothman farm, dry in the fifth sand, has been filled back to the Big Injun sand and good for 3 bbls. a day in the latter formation. On Big Paw Paw Creek, same district, the same company has a fair gasser in the Gantz sand at a second test on the T. L. Thorn farm. In Union district, Ritchie County, the Carnegie Natural Gas Co. has the rig completed for No. 5 on the W. S. Chapman farm.

In Liberty district, Marshall County, G. B. Patterson's test on the Alfred Howard heirs' farm is a gasser in the Gordon sand. In the same district, the Carnegie Natural Gas Co.'s No. 7, on the Thomas Conway farm, is a duster.

Clay County

On Ports Creek, Union district, Clay County, the Empire Petroleum Co. has completed in the Big Injun sand a second test on the Charles Osborne farm. It is a gasser, good for 350,000 feet. On Wolf Run, Union district, Pleasants

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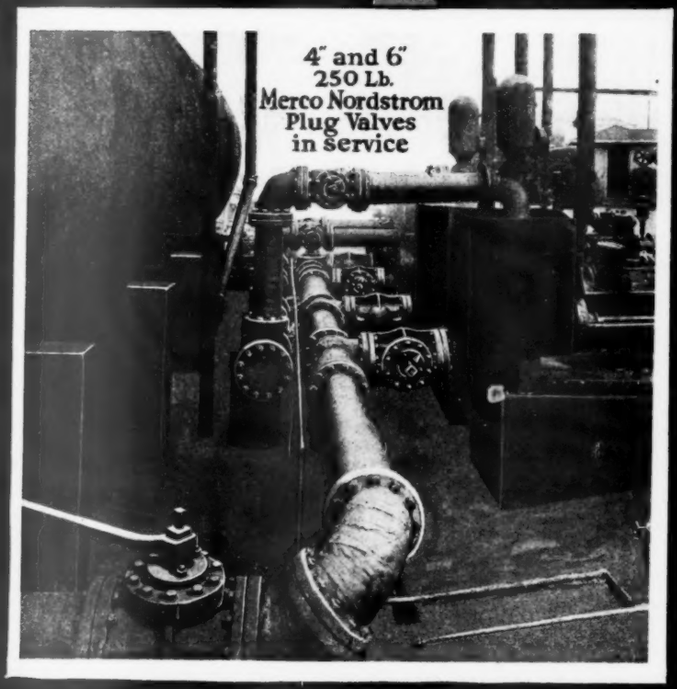

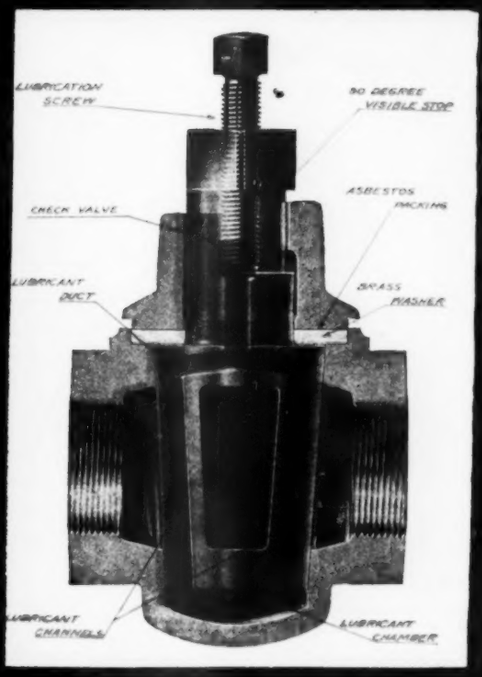

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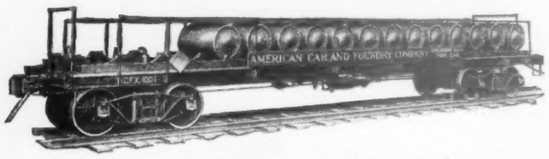

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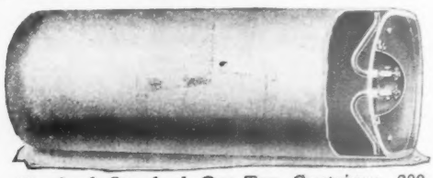

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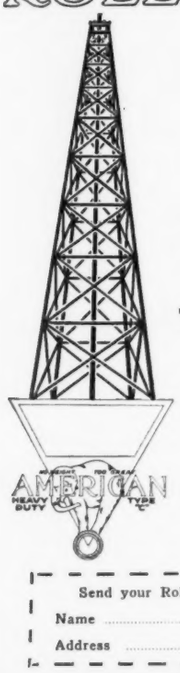

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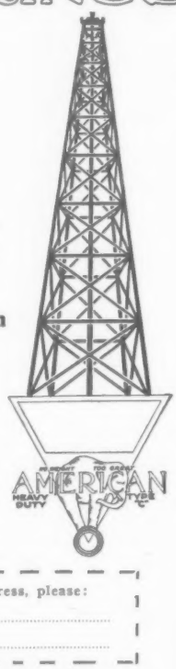

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PITTSBURGH, PENNA.

County, L. C. White has started to drill a test on the Gardner heirs' farm. In New Milton district, Doddridge County, Trainer & Travis are due in the Big Injun sand at a test on the George Ross farm. In McClelland district, the Carnegie Natural Gas Co. has a gasser in the Maxon sand at a test on the Ruth Shrader farm.

Drilling Test Wells

In Sherman district, Calhoun County, Kingsbury & Dallman have the rig completed for a test on the Lilley Force farm. In Grant district, Ritchie County, the Vincent Oil Co. has a rig up on the William Vincent farm. In the same district, Elder & Co. have a rig up on the J. W. Sharp farm. In Central district, Doddridge County, the Parkersburg Oil & Gas Co. is hauling rig timbers to a location on the Leroy Ingram farm. In Carroll district, Lincoln County, the Grant Gas Co. has started to drill on the Everett and P. Vickers farm. In Duval district, E. R. Cameron has started to drill on the George P. Alderman farm. In Sheridan district, H. H. Dial and others are moving a drilling machine to a location on the J. M. Ferrell farm.

In Barbourville district, Cabell County, Ortman & Shipe have a rig completed for a test on the B. F. Wallace farm. In Coal district, Harrison County, the Clarksburg Light & Heat Co. is making a road to a location on the S. D. Gore heirs' farm. In Simpson district, the same company is rigging up on the H. G. and A. A. Lang farm and moving in rig material to a location on the Mary Bramer farm. In Clark district, the Hope Natural Gas Co. is building a rig on the C. W. Lynch farm. In Otter district, Braxton County, J. H. Gaines has started to drill on the C. L. Engle farm. In Center district, Gilmer County, C. W. McCall & Co. are rigging up on the Carry Mollohon farm.

On Laurel Creek, Union district, Wood County, the South Penn Oil Co. has the rig completed for a test on the W. H. Scott farm. On Worthington Creek, same district and county, E. A. Sweeney has moved a drilling machine to a location on the G. H. Ralston farm.

On Ten-Mile Creek, Ten-Mile district, Harrison County, the Clifton Oil & Gas Co. has the rig completed for another test on the J. J. Williams farm. In Southwest district, Doddridge County, the Pittsburgh & West Virginia Gas Co. has completed the rig for a second test on the E. L. Legett farm. In Grant district, Pleasants County Barkwell Brothers & Co. have started to drill on the O. C. Reynolds farm.

Southwest Pennsylvania

In Gilmore Township, Greene County, Charles Garrison and others have completed a test on the D. K. Phillips farm. It is dry in all sands and abandoned. In Perry Township, the Charles Fox Gas Co. has completed a test on the Charles Lemley farm. It is a light gasser in the Bayard sand.

Late Gauges of Best Wells

In Morris Township, the Consumers Fuel Co. shot its old No. 1 on the Thomas Anderson farm and increased its production to 485 bbls. the ensuing 24 hours. The second 24 hours it was holding up at 408 bbls. It is somewhat remarkable how the wells in this development come back when shot or agitated. The Consumers Fuel Co.'s Nos. 1 and 2, on the Thomas Rutan farm, are holding up at 70 and 75 bbls. respectively; No. 1 Alfred Rutan, 110 bbls. and Carnegie Natural Gas Co.'s No. 1 J. S. Rutan, 90 bbls. With the completion of the wells now drilling the production of the pool should show an increase.

Gasser in Washington County

Near Hickory, Washington County, the Cowden Oil & Gas Co. has drilled in a test on the Lee Cowden farm. It is a gasser, good for 500,000 feet.

KENTUCKY-TENNESSEE

(Continued from Page 60)

initial production. The Wood Oil Co.'s No. 5 on the J. U. Bartley 189 acres, failed to make any showing in the Jett and Barlow sands, and goes down as a dry hole. C. A. Leeper is reported to have one of the same kind at a test on the E. L. Farmer 100 acres, just west of the productive J. S. Collier farm, which drilled through both the Jett and Barlow formations. The Penn-Indiana Oil Syndicate's No. 3 on the C. A. Kelly 260 acres, shows for 10 bbls. in a stray sand.

The Rex-Pyramid Oil Co. advance test on the J. L. Sinnett 210 acres, is reported dry in all known formations.

The Leeper Oil Co.'s second well on the Monroe Collier farm, in the Collier Pool, is showing for 30 bbls. initial.

The Victon Oil Co.'s No. 10 on the O. T. Burdette 35 acres, is reported good for 5 bbls. in the Jett sand.

The Ohio Oil Co.'s No. 2 on the Ellis-Heflin farm, is showing for 10 bbls. from the Jett sand.

The production of the Owensboro Field for July increased 6,383.78 bbls. over the total production for June and is growing by leaps and bounds.

Allen County

The old Scottsville Field of Allen County is being rejuvenated after months of small strippers and few completions, which was brought about by the completion of some wells above the average. A well of the Seaboard Oil Co. on the McReynolds lease, which came in at 145 bbls. for the first 24 hours, has settled down to a regular 15-bbl. pumper. This was an old abandoned well that was cleaned out and deepened.

Unknown parties drilled a well on the Widow Gibbs lease in the Keen Pool, in the southwestern part of Allen County, that is reported to have made better than 30 bbls. in 24 hours. This pool has no pipeline connections as the Indian Pipe Line Corp. took up its gathering lines on account of the decline in production.

Seven miles southwest of Scottsville, there is revival in the Justice Pool, owing to the completion of more than fair producers. A. Davis is hitting production nicely on the W. Marvin Dodson farm, as his No. 4 struck a heavy pay at 380 feet and the oil flowed over the top of the drilling mast and still reported flowing its oil at the rate of about 75 bbls. daily. Another well fully as good, if not better than No. 4, is the No. 5 which is also estimated better than 75 bbls. at approximately the same depth. This and the McReynolds farm appears to be the secret to the advance in production for the past few days. The Indiana Pipe Line Corp. is reported laying a gathering line to the Justice Pool and will care for the output of crude.

About 5 miles south of Scottsville in the Hooten Pool, T. S. Bastrus and others have what shows for a 5-bbl. pumper, on the Parrish lease. James Healy, attorney, has completed No. 13 J. F. Stovall farm, estimated at 3 bbls. at 385 feet. Charles Foster and others have a 1-bbl. pumper in No. 5 on the John Meador farm, at 435 feet.

Carter and Lewis Counties

Through the courtesy of an old-time oil operator some interesting information is given on the prospects of the western part of Carter County and southeastern part of Lewis County, Kentucky, which is being prospected for Weir and Berea sand production and deeper pay sands.

The western section of Carter County and the southeastern section of Lewis County, Kentucky, are underlaid by five possible oil and gas bearing horizons within a depth of approximately 1,600 feet—the Weir, Berea, Corniferous, Clinton and Trenton.

These two sections have the unique position of lying both in the trend of the State's Corniferous production, at the same depth under cover as the Big Sinking, and also lying in the trend of the Weir-Berea production, being on the same large "high" that extends across the State of Kentucky in a northwest-southeast direction, and commonly called the Paint Creek Uplift.

The section mentioned above occupies a position north of the Martha Pool about 30 miles and at Fytch post office, a point near the county lines of Carter, Lewis and Rowan, reaches a height for the Waverly (base of Big Lime) of 1,150 feet,

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1925

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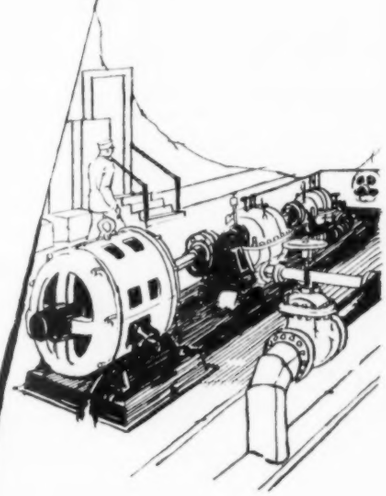
Very truly yours,

Manager Transp. & Ref. Dept.



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In All Fields

the highest point geologically between eastern Rowan County and the Keaton oil pool.

Fytch post office is located on a high dividing ridge between the counties of Rowan, Lewis and Carter, and is near the heads of the Major Creek system of Kinniconnick, Tygarts and Triplett, which streams are as long as young rivers and all head up on this dividing ridge near Fytch post office. This point is also near the center of a vast scope of country which has never been tested for oil and gas, covering something over 150 square miles.

The Weir sand has already been shown to be oil producing within this area from 2 to 5 bbls. of production per day over a large area, and also the Berea sand has shown production, and both sands are at a lesser depth than 600 feet.

The Corniferous can be tested around 900 feet and the Clinton in the neighborhood of 1,400 feet, while the Trenton can be found at around 1,600 feet. A short distance northeast of this section a well drilled to the Trenton horizon at a total depth of 1,667 feet showed oil at 1,529 feet in the Trenton, said well having been drilled by the United Fuel Gas Co. and the Transylvania Oil & Gas Co. in 1918 and with the exception of one other test on Big White Oak Creek in Greenup County, Kentucky, drilled by the same companies, which showed oil in the Corniferous, there has not been a Clinton or Trenton test made in that locality.

Just north of this general area, and near the mouth of Straight Fork of Kinniconnick Creek in Lewis County, at a depth of 250 feet, Corniferous production was found some few years ago, accompanied by fresh water. This was to the northwest of the Fytch post office area; to the east and southeast of this area numerous tests have found a great body of salt water in the Corniferous horizon, thus giving rise to an exact parallel of conditions on two sides of the large Corniferous producing field of Estill and Lee Counties, Kentucky.

Within the last 12 months the Weir and Berea have been prospected and proven productive of from 2 to 5 bbls. of high grade oil, grading Somerset light, at less than 600 feet in depth at drainage. The area tested covering a distance of over 8 miles, which showed oil in one or both sands. The area which occupies a position higher on the structure is yet untested.

Of Easy Access

This area is also of easy access, as the recently constructed Midland Trail, one of the best highways in Kentucky, passes through the southern portion of it, and the wagon roads leading off of the trail are kept in good, passable condition, and are much above the average for hauling supplies in the development for oil and gas.

In view of the fact that the Wier sand has not been known to bear oil in isolated wells only, either in Kentucky, West Virginia or Pennsylvania, and that a showing of oil in this sand has invariably been accompanied by a large field, this area is looked upon very favorably by men experienced in the production of Wier oil.

The Wier has become the second largest producer of oil in Kentucky, having produced more than 35 per cent of the State's production in 1924. Considering the life of the production from the Wier and the Berea sand, and the cost of operating and the number of oil and gas bearing horizons within a depth of 1,600 feet, this area is rapidly coming into prominence; and within the next few months, may be proven to be another large Wier-Berea pool for Kentucky.

Deep tests are planned to the Corniferous and Clinton with a possible Trenton test or two.

Big Operators Interested

Companies and individuals having acreage in this area are the Petroleum Exploration, Elmer Hupp, Eastern Gulf Oil Co., R. A. Chiles, Superior Oil Co., the Standard Oil Co. of Kentucky, The Rex-Pyramid and M. L. Marcom.

The greater part of this area is held under lease by L. S. Robbins of Carlysle, Ky., and W. L. Watson, Ashland, Ky., who discovered its oil and gas possibilities some two years ago through core drillings in the testing of fire clay properties, in which Judge W. L. Watson is extensively interested, covering a body of over 10,000 acres, which is owned in fee by the Oliver Hill Refractories Co., of which Judge Watson is a stockholder. Mr. Robbins and Mr. Watson have leased over 10,000 acres in this vicinity and are now engaged in drilling and letting out blocks of acreage for drilling on the offset plan.

The Rex-Pyramid Oil Co., of Winchester, Ky., has one well on the pump at Limestone on the C. & C. R. R. on the southern edge of this area, and more wells will be drilled at once near this test. Trough Camp, to the north of this tract, will get a play at once, as will the Flat Rock Fork District in western Carter County, and the head of Laurel Creek, in Lewis County, Kentucky.

Sinclair 6s Series C Made More Attractive. Carry Stock Warrants

Sinclair Consolidated Oil Corp. 6s, Series C, due December 1, 1927, carry non-detachable stock purchase warrants entitling the holder of each $1,000 bond on presentation thereof to purchase common stock in amounts of 40 shares at $22.50 a share if exercised on or before December 1, 1926; or 40 shares at $25 a share if exercised thereafter on or before June 1, 1927, says the Wall Street Journal. In the event that the bonds are called for redemption, the right to exercise the warrants is to extend up to 30 days prior to the date fixed for redemption, but in no event later than January 1, 1927. This feature gives the bonds a speculative value based upon the price movement of the common stock. Sinclair Consolidated Oil Corp. 6s, Series C, are selling around 105, while the stock has recently changed hands at 22.

Series C 6s are outstanding in amount of $15,000,000. There is no sinking fund for this series, but they are redeemable if accompanied by uncancelled stock purchase warrants at 103 and interest up to December 1, 1926; thereafter at 101 to June 1, 1927; thereafter and whenever redeemed, if not accompanied by uncancelled stock purchase warrants, at par and interest.

Sinclair Consolidated Oil Corp.'s report for the year ended December 31, 1925, showed total assets of $351,912,759, against which there was a funded debt of $90,954,499. Surplus was $15,423,645 and net working capital $22,616,686. Funded debt was reduced $2,343,001 during 1925 and fixed charges were earned 1.78 times.

Series C bonds were offered in 1924 at 98½ and interest. They are listed on the New York Stock Exchange and they enjoy an active market. They are secured jointly with the first lien collateral 7s, series A and the 6½s, series B, by $110,000,000 face amount of subsidiary companies first mortgage 7s; capital stock owned by the corporation of an aggregate par value in excess of $80,000,000 including its holdings of stock of the Sinclair Pipe Line Co. and $10,000,000 stock (of $30,000,000 par value owned) of Sinclair Crude Oil Purchasing Co.

PROGRESS ON LULING LINE

SAN ANTONIO, Tex., Aug. 21.—Magnolia Petroleum Co., which has started the construction of its pipeline from its tankfarm in Luling to its tankfarm at Oilton in Webb County, working from several points, has reached Nixon in Wilson County, a distance of about 40 miles from the Luling end. Another gang is working north toward Luling from Three Rivers. Gangs are also working south from Three Rivers and north from Oilton. The Nueces River has been crossed 1 mile south of Three Rivers in Live Oak County.

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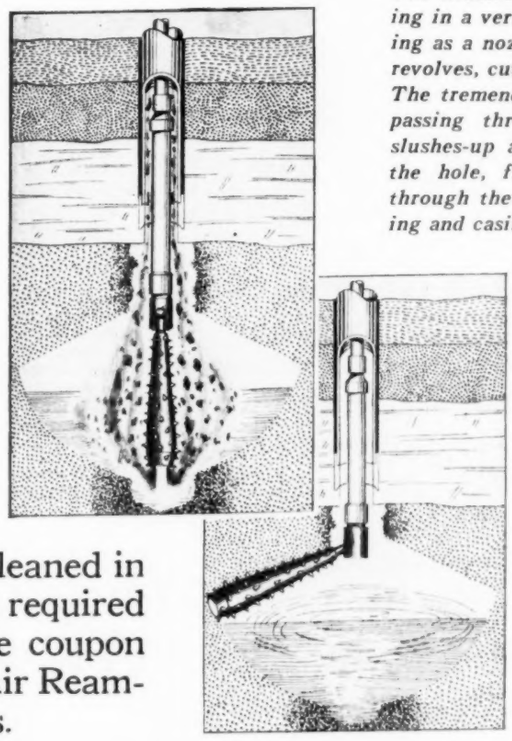

The illustration shows the air reamer hanging in a vertical position when blowing, acting as a nozzle. Reaming it throws out as it revolves, cutting a new face on the oil sand. The tremendous volume and velocity of air passing through the reamer loosens and slushes-up all cavings and debris found in the hole, forcing them out of the well, through the annular space between the tubing and casing.

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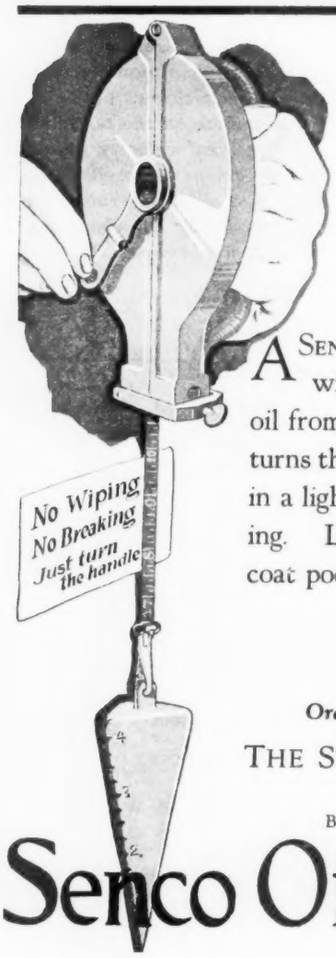

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POSSIBILITY OF FINDING OIL IN ANTICLINE NEAR EDGEMONT, S. DAK.

The discovery of small quantities of oil and gas in a well drilled near Edgemont, S. Dak., in 1925, led the Department of the Interior to make studies of the area. W. W. Rubey, of the Geological Survey, visited the area in June, 1926, and the facts disclosed by his work indicate that anticlines near Edgemont, the existence of which has long been known, may contain oil and gas.

A well drilled by the Ireland & Hollingsworth Oil Co. in the northeast quarter of the southwest quarter of Section 17 8s-3e, 4 miles northeast of Edgemont, is reported to have found some oil and gas in July, 1925, at a depth of about 2,000 feet, in the lower part of the Pennsylvanian Minnelusa sandstone. When first drilled the well is believed to have had a daily production of about 5 bbls., and the oil produced was black but of intermediate or light gravity. A fresh sample examined by the South Dakota State School of Mines had a gravity of 41 degrees Baume, and a badly weathered tank sample a gravity of 30 degrees Baume.

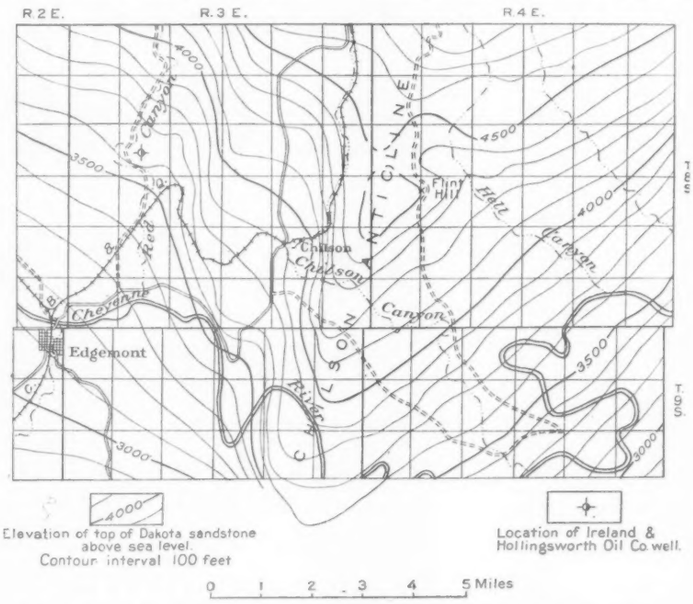
Small quantities of oil in the Minnelusa sandstone in other parts of the Black Hills region have been known for some time. In 1912 a small showing of oil was reported from the middle of the formation in the city water well at Edgemont.[1] In 1917 some black oil was found in the base of the Minnelusa sandstone or the top of the underlying Pahasapa limestone (Mississippian) in a well on the Old Woman anticline in Niobrara County, Wyoming, 30 miles southwest of Edgemont. For nearly 25 years seeps of black oil from the top of the Minnelusa sandstone have been known near Rocky Ford, Wyo., 80 miles north of Edgemont, and for many years shallow wells there have produced small quantities of oil that has a gravity of 17 degrees Baume.

Structure of Rocks Near Edgemont

In the Edgemont region the rocks dip rather gently southward and southwestward away from the Black Hills uplift, except where locally they are wrinkled into anticlines and synclines that slope southward. The largest of the anticlines, named from west to east, are the rather gently folded Cottonwood anticline, which extends for 20 miles southwest of Edgemont; the somewhat steeper-sided Chilson anticline, which extends for 30 miles from the area near Minnekahta to Ardmore and beyond into Sioux City, Neb., and the very steepsided Cascade anticline, which extends for 25 miles south from the area near Hot Springs.[2]

The Ireland & Hollingsworth well, which was reported to have found oil in 1925, lies on a small flattened structural terrace low on the flank of the Chilson anticline, about 5 miles west of its crest line. East of this well, near the conspicuous landmark known as Flint Hill, the slope of the crest of the anticline shows irregularities which probably form a small dome with a "closure" of 50 or 75 feet (see accompanying map), and on such domes oil is most likely to be found.

From Flint Hill the beds rise 100 feet to the mile northward along the crest of the anticline to and beyond the outcrop of the lower part of the Minnelusa sandstone, which is 15 to 20 miles distant, and any oil that was once present may have been flushed away by the water that flowed down the dip of the rocks, but the conditions can be determined only by drilling. Wells drilled on the Chilson anticline near Ardmore, 13 to 20 miles south of Flint Hill, stopped above the Minnelusa sandstone and therefore afford very little evidence as to the possibilities of the presence of oil in the region.



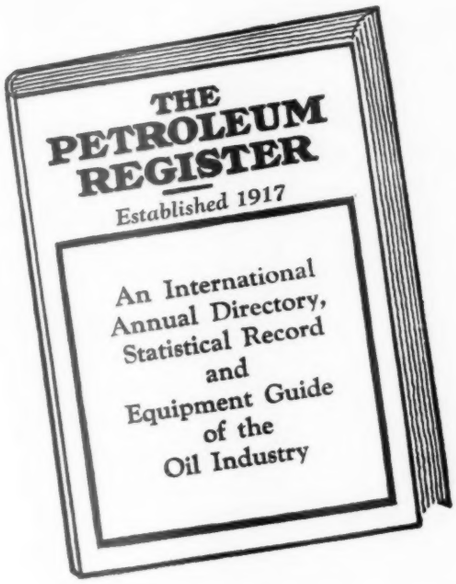
U. S. Geological Survey structure contour map of a part of the Chilson anticline near Edgemont, S. Dak., after N. H. Darton and W. S. T. Smith, Edgemont Folio, modified by W. W. Rubey.

Formations Penetrated

The Ireland & Hollingsworth well started in Quaternary terrace deposits that lie upon the upper part of the Dakota sandstone. According to tentative correlations made by Mr. Rubey, this well penetrated 373 feet of sandstone and shale that may be referred to the Dakota, Fuson, and Lakota formations (all Cretaceous), 175 feet of brown, black, and gray shale that probably belongs to the Morrison formation (Cretaceous ?), and 429 feet of shale, limestone, and sandstone of the Sundance formation (Jurassic). The red shale that lies at a depth of 738 to 812 feet is undoubtedly the red member of the Sundance formation, and the waterbearing sandstone between 920 and 973 feet is almost certainly the basal

[1] Darton, N. H., Artesian water in the vicinity of the Black Hills, S. Dak.; U. S. Geol. Survey Water Supply Paper 428, pp. 55-59, 1918.

[2] Darton, N. H., Preliminary description of the geology and water resources of the southern half of the Black Hills and adjoining regions in South Dakota and Wyoming. U. S. Geol. Survey Twenty-first Ann. Rep., pt. 4, p. 550, pl. 89, 1901. Darton, N. H., and Smith, W. S. T. U. S. Geol. Survey Geol. Atlas, Edgemont folio (No. 108), p. 8, fig. 2, 1904.



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member of that formation . The Triassic (?) "Red Beds" (Spearfish formation) were reported as 648 feet of red shale, and the Minnekahta limestone (Permian ?), which separates the overlying Spearfish from the underlying Opeche formation (Permian ?), was not noted.

At 1,625 feet the drill entered the Minnelusa sandstone, which, though reported as entirely limestone, is shown by the cuttings to be made up largely of fine and medium grained, well-rounded quartz sand tightly cemented with lime. Nearly all the formation was reported as gray and white except some thin beds between 1,790 and 1,983 feet, which were reddish. Water was reported at a depth of 1,910 feet, about 2,000,000 feet of gas at 2,000 feet, and 5 bbls. of oil at 2,085 feet.

From 2,089 to 2,230 feet (the depth at which drilling was discontinued) the driller reported unbroken hard gray lime. Although the cuttings from this part of the hole contain much sand, it seems probable from thicknesses at the outcrop and from the logs of other wells in the region that these rocks belong to the Mississippian Pahasapa limestone. If this interpretation is correct, only Mississippian limestone and the Cambrian rocks, and the deepening of this well would not be advisable.

Depth of Suggested Well

A well located in the valley in the center of the west half of Section 19-8s-4e, to test the small dome near Flint Hill would start near the base of the Lakota sandstone and, if the thicknesses were the same as those in the Ireland & Hollingsworth well, would reach at 1,500 or 1,600 feet the horizons at which the showings of oil and gas were found. However, near the Chilson anticline the Dakota and Lakota sandstones appear to thicken, and eastward from Edgemont the Unkpapa sandstone (Jurassic) comes in between the Morrison and Sundance formations, and therefore oil and gas should not be looked for in such a well at a depth much less than 1,800 feet.

If a test near Flint Hill proves successful or promising other areas of "closure" should be south on the Chilson anticline between Section 25-9s-3e, and Section 5-11s-4e, but these areas would require much deeper drilling. The Cottonwood anticline near the common corner of Townships 10 and 11s, Ranges 1 and 2e, and the Cascade anticline south of Cheyenne River should also be studied for evidences of local doming.

GULF PORT SHIPMENTS IN JUNE SHOW GAIN OF HALF MILLION BARRELS

HOUSTON, Tex., Aug. 21.—A total of 16,764,782 bbls. of refinery products and crude were shipped from Gulf ports during June compared with 16,185,402 bbls. in May.

The following are the shipments in detail:

FROM PORT ARTHUR
By The Texas Company
Refined

Coastwise	1,195,580
Export	247,831
Total	1,443,411
Crude	
Coastwise	37,638

FROM PORT ARTHUR
By Gulf Refining Co.
Refined

Coastwise	2,231,514
Export	235,659
Total	2,467,173
Crude	
Coastwise	224,770

FROM BEAUMONT
By Magnolia Petroleum Co.*
Refined

Coastwise	1,361,907
Crude	
Coastwise	458,830

*Company makes no distinction between coastwise and export consignments.

FROM PORT ARTHUR
By Atlantic Oil Producing Co.
Crude

Coastwise	37,767

FROM ATRECO
By Atlantic Oil Producing Co.
Refined

Coastwise	105,128
Crude	
Coastwise	564,823

FROM SMITH'S BLUFF
By Atlantic Oil Producing Co.
Crude

Coastwise	63,604

FROM NECHES TERMINAL (Orange)
By Humble Oil & Refining Co.
Crude

Coastwise	105,565

FROM TEXAS CITY
By Humble Oil & Refining Co.
Crude

Coastwise	1,134,265

FROM TEXAS CITY
By Vacuum Oil Co.
Crude

Coastwise	395,907

FROM TEXAS CITY
By Swiftsure Petroleum Co.
Crude

Coastwise	191,450

FROM BAYTOWN
By Humble Oil & Refining Co.
Refined

Coastwise	873,870
Export	772,277
Total	1,646,147
Crude	
Coastwise	1,134,265
Export	53,996
Total	1,188,261

FROM TEXAS CITY
By Marland Oil Co.
Crude

Coastwise	354,902

FROM HOUSTON (Sinco)
By Sinclair Refining Co.
Refined

Coastwise	513,910
Crude	
Coastwise	291,271

FROM HOUSTON (Pasadena)
By Crown Central Petroleum Corp.
Crude

Coastwise	104,803

FROM HOUSTON (Galena)
By Galena-Signal Oil Co. of Texas
Refined

Coastwise	110,000
Export	56,000
Total	166,000

FROM HOUSTON
By Deepwater Oil Refineries
Refined

Export	42,000

FROM BATON ROUGE
By Standard Oil Co. of Louisiana
Refined

Coastwise	923,480
Export	1,038,803
Total	1,962,283
Crude	
Coastwise	1,902,967

SUMMARY
Shipments by Water of Refined and Crude During Month of June, 1926.

Company and Port—	Refined	Crude	Total
The Texas Company, Port Arthur	1,443,411	37,638	1,481,049
Gulf Refining, Port Arthur	2,467,173	224,770	2,691,943
Magnolia Petroleum, Beaumont	1,361,907	458,830	1,820,737
Atlantic Oil Producing, Port Arthur		37,767	37,767
Atlantic Oil Producing, Atreco	105,128	564,823	669,951
Atlantic Oil Producing, Smith's Bluff		63,604	63,604
Humble Oil & Refining, Neches Terminal		105,565	105,565
Humble Oil & Refining, Texas City		1,134,265	1,134,265
Vacuum Oil, Texas City		395,907	395,907
Swiftsure Petroleum, Texas City		191,450	191,450
Marland Oil, Texas City		354,902	354,902
Humble Oil & Refining, Baytown	1,646,147	1,188,261	2,834,408
Sinclair Refining, Houston	513,910	291,271	805,181
Crown Central, Houston		104,803	104,803
Galena-Signal, Houston	166,000		166,000
Deepwater Refining, Houston	42,000		42,000
Standard Oil of Louisiana, Baton Rouge	1,962,283	1,902,967	3,865,250
Total for June	9,707,959	7,056,823	16,764,782
Total for May	9,931,235	8,254,167	16,185,402
Difference	223,276	802,656	579,380

EXPORT SUMMARY

	Refined	Crude	Total
The Texas Company, Port Arthur	247,831		247,831
Gulf Refining, Port Arthur	235,659		235,659
H. O. & R., Baytown	772,277	53,996	826,273
Galena-Signal, Houston	56,000		56,000
Standard of Louisiana, New Orleans	1,038,803		1,038,803
Total for June	2,350,570	53,996	2,404,566
Total for May	2,487,561	300,205	2,787,766
Difference	136,991	246,209	383,200

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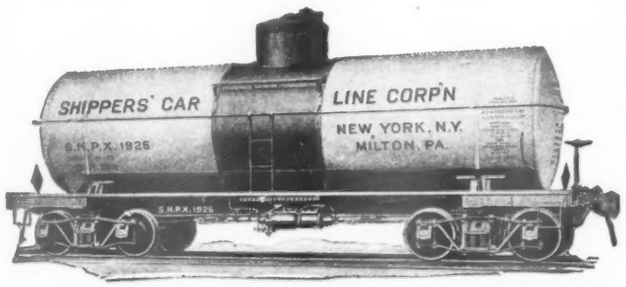

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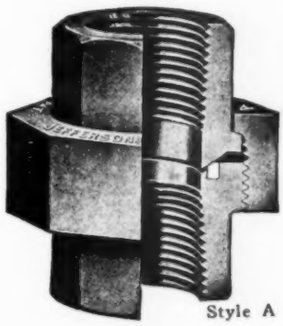
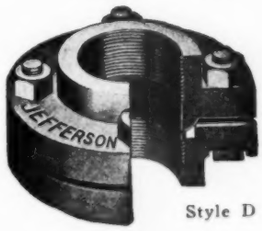


Style A

Style B



Style D

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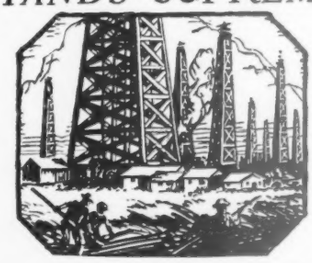

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PRODUCING AND REFINING IN THE "HOTTEST PLACE IN THE WORLD"

By John B. Waldo

CHICAGO, Aug. 20.—Persia is known to most outside of the oil industry as the land of Shahs, of dates and quite frequently of revolutions which claim space in the pages of the daily press. Few outside of the oil industry realize that it is the source of a vast volume of motor fuel and other petroleum products or that it has enormous resources of crude oil. Yet such is the fact and today the Persian oil fields and the refineries of the Anglo-Persian Oil Co. supply a large part of the gasoline and other refined products consumed in Great Britain while having some export trade in these commodities with other parts of the world.

Among the recent visitors to Chicago was E. C. Brewster, superintendent of the great Abadan refinery of the Anglo-Persian Oil Co. Mr. Brewster is making a tour of the world partly for pleasure but also with a mind to look closely into the oil industry of this and other countries. Mr. Brewster has his headquarters at Abadan, Persia, where the great refinery of his company is located, about 50 miles from the south of the Shot-el-Arab River. In speaking of the activities of the organization in southern Persia, Mr. Brewster stated that the crude produced from the Persian fields operated by the Anglo-Persian Oil Co. is of a specific gravity of .833 to .834, the equivalent in the Baume scale of 38 degree crude. This is produced from wells drilled to a depth of from 1,500 to 2,000 feet. The field is very prolific. All the wells flow and pumping has never been resorted to in any case as yet. A well to be considered as a real well would have to have a daily production of 2,500 bbls. The oil, Mr. Brewster stated, is free from water and b.s. and has a sulphur content of less than 1 per cent. The crude is transported to the refinery at Abadan from the field through a pipeline 140 miles long consisting of two 8-inch lines and one 10-inch line, which for some stretches is enlarged to a 12-inch line. The line has to cross a rather high elevation just outside of the main oil field. The pumping equipment consists of one main pumping station and three booster stations operating turbine-driven centrifugal pumps. The line is capable of transporting 110,000 bbls. daily when operated to capacity, but additions to increase this capacity are now in hand.

A Complete Refinery

The refinery at Abadan operates as a topping plant although it has a complete and modern wax, lubricating oil and a pitch plant. The capacity of the refinery is very great and the throughput is really limited by the deliveries from the pipeline, allowing offtake for the company's other refineries in Wales, Scotland and Australia. The average throughput is from 70,000 to 80,000 bbls. daily at present. The plant does not at present have any cracking stills but the company is looking carefully into the merits of various cracking processes and a decision will be shortly made and a number of cracking stills installed.

The output of the plant is at present chiefly gasoline, kerosene and fuel oil although some crude and light distillate is shipped by tankers to England for ultimate refining. The organization includes a tanker fleet that is one of the largest owned by any oil producing and refining company in the world. The refined products are largely exported, although there is some distribution to care for the local requirements. The fuel oil is marketed in the East in a large part while the lighter products are exported by tanker to England and other European countries.

Largely Native Labor

The labor employed in the production and refining is largely local and the company is unsparing in its efforts to build up an efficient force of employes and improve the conditions under which they may live. Previous to 1922 a large part of the skilled labor came from northern India but in that year there was much agitation among the siekh labor resulting in a strike and lockout and since then the attention of the management has been directed to the employment of trained native Persian labor.

"Hottest Place in the World"

In speaking of conditions that confronted the management, Mr. Brewster stated that southern Persia held the record for being the hottest place in the world during the summer months, the temperature in the shade frequently reaching higher than 120 degrees Fahrenheit. In the winter months there might be occasionally a few degrees of frost. The winter is a reasonably agreeable climate for Europeans.

To combat the conditions of a hot summer as well as those incident to the habits of this very old country the Anglo-Persian Oil Co. has recently built a village area for its native workers at a cost estimated at upwards of $3,000,000. Here modern sanitation methods are applied for the betterment of the conditions of its workers and to insure immunity so far as the best present knowledge of civic improvement can do from epidemics of a serious nature which might interfere very greatly in the operation of the entire Persian plant. A complete staff of sanitary and municipal engineers is engaged and they are endeavoring to develop modern ideas in regard to sanitation and to improve the housing and living conditions of the native employes of the organization. The Europeans are well housed in brick and concrete bungalows possessing electric light, baths, gas, and other modern conveniences.

Mr. and Mrs. Brewster started on their long world-circling trip on April 13. Their direction was eastward and one of the stopping places was Rangoon where they visited the Burmah Oil Co. plant. This refinery is undergoing a most intensive program of concentration and reconstruction and when the program is complete the company will have, it is the opinion of Mr. Brewster, one of the most modern and efficient refining units in the world. Landing in San Francisco a little over two months from the starting of their journey, the Brewsters have traveled to Chicago observing the land, the people and most particularly the petroleum industry.

Mr. Brewster has been greatly impressed with the keenness and enthusiasm displayed by the American oil man in the direction of research work and improved methods for the refining and treatment of oil products. He was outspoken in his belief that the future of the automotive industry was bound up in the cracking process for gasoline manufacture and that it would prove the saving of the gasoline market. He is impressed with the merits of a number of the various processes but claimed to be too unfamiliar to speak with any authority on any part of this modern development. It is most possible that Mr. Brewster is unduly modest in regard to his acquaintance with cracking and cracking processes.

Persia a Great Oil Field

While not a producing man, but by profession a chemist refiner, Mr. Brewster is enthusiastic regarding the great possibilities of the Persian oil fields. He characterized it as the most wonderful oil field. High-grade crude is produced from a comparatively shallow horizon in such quantities that a well making less than 2,000 bbls. daily is characterized by the producers as a "dud." It is the consensus of opinion that this field, judging from the part so far proved, will in all likelihood prove to be the greatest oil field ever exploited in the world.

Prior to joining the staff of the Anglo-Persian Oil Co., Mr. Brewster was associated with the coal tar distillation industry and with the utilization and working up of products from peat. During his connection with the Anglo-Persian Oil Co., for the last 12 years, Mr. Brews-

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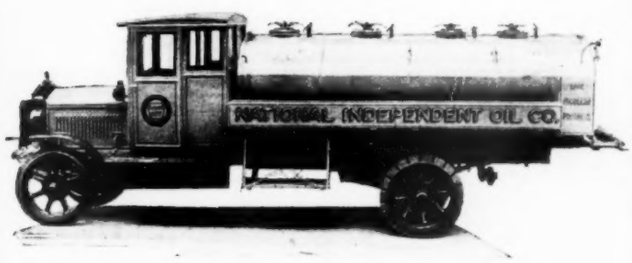

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ter has been associated with the expansion of the refinery from 5,000 bbls. daily throughput to its present capacity.

When interviewed Mr. Brewster was investigating the Schultze high vacuum distillation process for lubricating oil manufacture at the office of the Red River Refining Co. In his opinion this process marks one of the most important developments in the oil refining art of recent years and a large future seems possible for its application, particularly in view of the necessity of first-class lubricants for modern high-speed machinery.

Something About the Social Life

The thought naturally arises as to how Europeans of culture and refinement live in what must seem to most such an out-of-the-way place as that of Abadan where the great refinery of the Anglo-Persian Oil Co. is located. Mr. Brewster says that it is not so bad, especially after the first year. Englishmen are said to take a bit of their mother country with them in the shape of the club. In their distant isolated colonies they establish their center of social and often of political life in their club. In speaking of the life at Abadan, Mr. Brewster said that they have a first-rate clubhouse containing reading, writing, billiard and concert rooms besides the usual service rooms of a complete club. The floor of the concert room is finished for dancing and is a first-class dance floor. To keep in trim physically, there are 10 tennis courts, a 9-hole golf course, squash-racket courts and a much used swimming tank. A central sports pavilion contains the gymnasium, shower baths and dressing rooms. A well stocked library is also a part of the club. The main sport control is in the Gymkhana Club and for the European members the Gymkhana Club operates hockey as well as Rugby and Association football clubs.

Club for the Asiatics

The native Persian, Indian and Armenian employes of the company also have a well organized club. A novel feature so far as clubs of this nature is concerned is that a dramatic section is a flourishing part of the life of the native club. This section occasionally produces plays in both English and Hindoo. Sports of all kinds for the native employes are encouraged by the management of the company and are well patronized by the employes.

For the comfort and enjoyment of the sailors who are attached to the numerous tank ships of the Anglo-Persian Oil Co. a sailors' club is now operating at Bawarda, the main oil loading station some 3 miles down stream from Anadan.

As has been previously stated, the health of the employes is cared for sedulously by the management. A large and completely equipped hospital is maintained by the company with a first-class staff of European doctors and nurses. There are separate buildings with wards for European and native patients with the general hospital administration building connecting the two buildings devoted to the wards and serving for the direction of both classes of patients. Besides caring for the health of its own employes, the company has set aside certain days and hours each week when public clinics are conducted at which any one who applies will receive the best medical treatment irrespective of caste or creed.

Superintendent of clubs is a position created and maintained by the company. It is the duty of this official to co-ordinate the activities and organization of all the clubs in the company's territory.

Gasoline Prices All Over the World Show Considerable Range

Gasoline retail prices outside of the United States vary from a low of 23 cents at Tunis, Tunisia, to $1.29 per gallon at Teheran, Persia, according to a survey made by the Bureau of Foreign and Domestic Commerce. The survey covers prices as of July 1.

Other points where gasoline prices are relatively high are Durban, British South Africa, 98 cents, La Paz, Bolivia, 65 cents; Bogota, Colombia, 73 cents and Riga, Latvia, 65 cents. The bureau in announcing the results of the survey says that the prices quoted for the different countries should not be used for comparative purposes without taking into consideration the various factors which tend to make inequalities in prices. These factors include sources of supply, quantity consumed, transportation costs, import duties, excise taxes, distribution and marketing costs and the quality of the gasoline sold.

Following are prices at representative points:

Place	Price in U. S. cents per gallon
Argentina—	
Buenos Aires	40
Australia—	
Sydney	44
Austria—	
Vienna	36
Azores—	
Horta, Fayal	56
Belgium—	
Antwerp	27
Brussels	26
Bolivia—	
La Paz	65
Brazil—	
Rio de Janeiro	44
British East Africa—	
Nairobi, Kenya	70
British South Africa—	
Johannesburg	60
Durban	98
Cape Town	60
Bulgaria—	
Sofia	34
Burma—	
Rangoon	53
Canada—	
Toronto	25
Montreal	25
Winnipeg	25
St. John's, Newfoundland	28
Ceylon—	
Colombo	45
Chile—	
Santiago	37
China—	
Shanghai	42
Hankow	50
Colombia—	
Bogota	73
Cuba—	
Havana	33
Czechoslovakia—	
Prague	31
Denmark—	
Copenhagen	27
Dominican Republic—	
Santo Domingo	45
Egypt—	
Alexandria	40
Federated Malay States—	
Singapore	44
Penang	42
Finland—	
Helsingfors	36
France—	
Paris	28
French West Indies—	
Martinique	45
Germany—	
Berlin	29
Greece—	
Athens	62
Guatemala—	
Guatemala City	67
Haiti—	
Port au Prince	45
Honduras—	
Puerto Cortes	70
India—	
Bombay	44
Irish Free State—	
Dublin	33
Italy—	
Rome	43
Palermo, Sicily	50
Japan—	
All main centers	37
Korea	49
Latvia—	
Riga	65
Lithuania	30
Mexico—	
Mexico City	38
Torreon	39
Netherlands—	
The Hague	32
Palestine—	
Jerusalem	58
Panama—	
Panama City	35
Peru—	
Lima	30
Philippine Islands—	
Manila	45
Poland—	
Warsaw	43
Persia—	
Teheran	1.29
Porto Rico—	
San Juan	25
Rumania—	
Bucharest	15
Spain—	
Madrid	47
Bilbao	50
Sweden—	
Stockholm	37
Switzerland—	
Burich	44
Turkey—	
Constantinople	33
United Kingdom	24
Uruguay—	
Montevideo	43
Venzuela—	
Maracay	49
Nicaragua—	
Bluefields	45
Yugoslavia	66
Tunisia—	
Tunis	23

Sivyer Castings can be forged and welded

To the left is a latch, and to the right a jaw, casting for an oil well tool and pipe tong. Both of these important parts are cast in Sivyer Electric Steel.

SIVYER (S) CASTINGS
DEPENDABLE

What We Mean by Interior Soundness

THE casting pictured to the left, above, is an example of what we mean by *interior soundness.* In this particular job the light section at the lower end of the piece tends to draw the metal as the casting cools. The natural result of such an action is a "shrink hole" somewhere along the lower end of the thicker head. A casting with such a defect must either be scrapped or be passed on with the danger of breakage in service. Here, as in so many other cases, Sivyer Foundry Practice has been able to eliminate both dangers for the manufacturer. A careful study of the part has led to the proper distribution of "heads," "gates," "risers" and "feeders" on the casting pattern. As a result, the natural "shrink" has been definitely "licked." How completely, is illustrated by the fact that not a single one of these castings has been reported as having broken in service.

SEND BLUE PRINTS

If you are having trouble with castings cast in other metals or by other methods, it is quite probable that Sivyer Electric Steel may be your solution.

At any rate the cost of sending us blue prints of the parts giving trouble is small—and we will be glad to tell you all we can without obligating you in any way.

MID-CONTINENT OFFICE:
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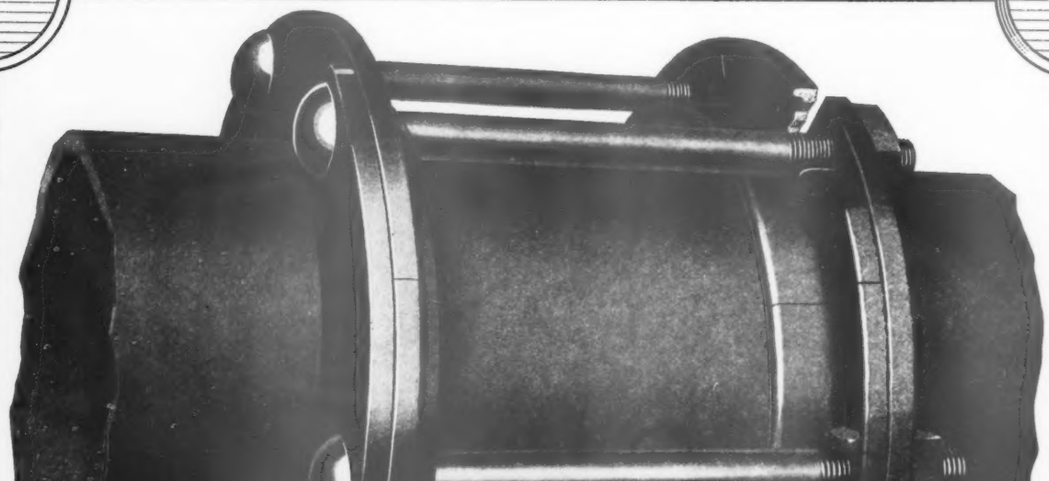
SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE



DAYTON
No 9
COLLAR LEAK CLAMP

THE DAYTON PIPE COUPLING CO.
DAYTON, OHIO

BRADFORD SODA TEST INTERESTS INDUSTRY

(Continued from Page 29)

the field is large and although the dips are consequently rather low, yet they are certainly sufficient to have controlled the accumulation of oil. The structure map being made by Torrey and his associates although of a detailed character can only be a basis for more detailed study. In areas where good records have been kept it will doubtless be of considerable value to the operators but in many cases it can only be generalized.

Mr. Torrey informed the writer that from the work already done it seems that the smaller features on the main structure are very important factors in the movement of the water through the sand, and as rejuvenating processes are further developed, these mere local features will doubtless receive more attention.

Importance of Well Spacing

"The most important problem in the field at present, in my mind is that of spacing of wells," said Mr. Torrey. "Most of the plans now in operation are of a rather arbitrary character and in only one instance has any one tried to determine what spacing will yield the most economical recovery. It seems logical to me that the wells drilled into a thick sand body can be spaced closer than those in a thin sand body. In this connection the saturation of the sand must be considered. Frequently a comparatively thin sand body will contain more oil than a much thicker one. Also, if the character of the sand is definitely known it would seem to me good practice to flood from thin to thick sand, for it seems foolish to push oil away from a hole where it is known to be present into some tongue of sand where it may be ultimately trapped and never recovered."

Influence on Water Travel

Mr. Panyity gives an interesting description of the structure together with a few brief notes on flooding that are of value.

"There are three anticlinal axes crossing the pool with their corresponding synclines," he saids. "The axis of the anticlines shows several domes with closures of over 100 feet, and that production from the Bradford sand is in all cases on the higher parts of the structures. It was possible, by carefully studying the structures and their effect upon flooding to note a peculiar phenomenon that exists between the structure and the direction of the water travel in the sand. In other words it is possible to indicate from the geological conditions existing in a territory the direction in which the water will travel the fastest. The general impression is that the water will flow fastest down the dip in the sand. However, this is not the case at all. The controlling factor is an entirely different proposition. Thus it is possible to determine from a geological study the directions in which water will travel in the sand, the importance of which is readily seen even in the purchase of a property.

"Supposing a lease is under consideration having an oblong shape and that under flooding the water will travel, for the sake of argument, in a north and south direction. In such a case it is desirable that such an oblong-shaped lease should also have a north and south direction to give maximum results from flooding, because it will be expedient to locate the wells for water at right angles with the direction of the fastest flow, or in this hypothetical case the water wells would be located east and west to take the full effect of the north and south movement from each water well.

Flooding in Other Fields

"My theory for the determination of the direction for water movement is applicable in such a sand as the Bradford sand, which is a tight and hard formation. The very open or porous formations are known to be rather undesirable for flooding purposes and undoubtedly the main reason why flooding has not been successful in other fields is due to the fact that the oil bearing horizons may have been of the open sand variety. Proper flooding in such a case can be carried on if a shallow synclinal basin is known to be present and the flood wells located in the lowest part of the basin. The reason is that in an open formation water travel will be affected by the direction of the dip owing to the larger porosity of such a sand and greater freedom in movement due to pressure, which is effective in a porous sand, while in its effect in a hard sand pressure of the water column is not the main controlling factor. Thus if water is allowed to enter an open formation through a small closed syncline, the water will travel up the dip, raising the oil ahead of it. This will be seen to be nothing but a case of gravitational separation of the two liquids in a very open formation. This synclinal method of flooding is applicable to an open sand and is recommended not as a sure method, but as the only possible method by means of which flooding may be carried on in an open sand."

What Happens in the Sand

As there have been a number of theories propounded as to the exact workings of oil and water in a tight sand, Mr. Panyity feels that another theory added to the long list now available can do no harm, but will simply supply the student of the method another probable explanation with which he may struggle in an attempt to get the real answer.

What happens in the sand, according to the Panyity theory, is this: "A great amount of oil is in the sand which due to a lack of moving force cannot be moved into the bore hole. The gas pressure is gone. Now we allow the water to come in contact with the sand containing the oil. There is a peculiar phenomena due to surface tension by virtue of which water will displace oil held in captivity in a small capillary opening. The power of this force, if measured in dynes, appears to be three times as great for water as it is for oil. Thus, if several of the small globules of oil are moved and collected by such an action, a much larger collection of oil is obtained in a certain space in the sand and which will also have an increased gas pressure, and the movement of oil to the well is due to the increased gas pressure thus created."

NEED JOINT ACTION IN SODA ASH EXPERIMENTS

(Continued from Page 29)

developed. A number of cores had been taken, each showing a high residual oil content. While salt water comes up with the oil, the contained salts were not of a nature or amount likely to interfere with the use of soda. Finally the oil was free from sulphur and from asphaltic bases and so valuable that operators could well stand the slight extra expense of experimental work to perfect the field technic of the process.

Accordingly the matter was taken up with A. E. Booth, president of the Petroleum Producers Association of Northwestern Pennsylvania, the first week of July, 1925. Mr. Booth responded wholeheartedly, calling and addressing meetings of the producers and introducing the survey speakers, Dr. W. T. Thom, Jr., and Dr. P. G. Nutting, who described the proposed experiment in detail. Other meetings and conferences were called and Doctor Nutting spent a week in Bradford advising operators as to procedure. Since then many operators have maintained close contact with the survey by visits and by correspondence.

Inquiries from Other Fields

Quite a number of inquiries have come in from producers in other fields (Canada, Wyoming, Oklahoma, California and others) relating to the process and many such producers are trying the use of soda privately. It is felt at the survey, however, that the best results can be obtained by dealing with local producers' associations as was done at Bradford. The best producing technic for a given field can be developed far better by a well advised body of men pulling together than by scattered producers operating sporadically. It is evident that producers in other nearly exhausted fields will not

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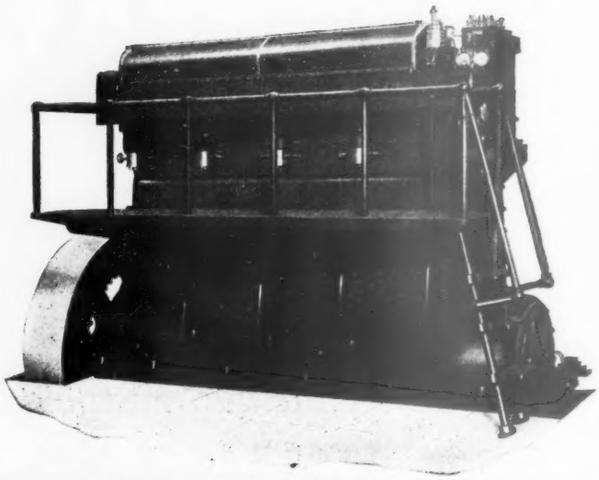

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Bulletin G-704 describes this engine.

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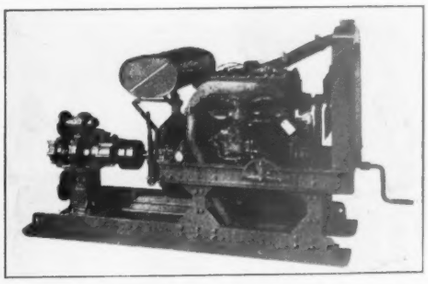

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be content to wait for the results of tests at Bradford before starting developments and tests in their own fields.

The survey is, of course, prepared to take up the matter with any other producers association as was done at Bradford, feeling that the method of approach used there could hardly be improved upon. It seems far preferable to deal with the men of a single field in a body rather than with men from widely scattered fields at a convention or with individuals by correspondence.

The field nearest like the Bradford Field is perhaps the Franklin-Tidioute-Titusville triangle centered at Oil City. Next perhaps come the shallow fields of Ohio and Kentucky with both lime and sulphur entering the problem. However, it is perhaps not too early to initiate systematic tests in some of the shallower, near exhausted fields of the Mid-Continent. Laboratory experiments on the using up of soda in advancing through sand indicate that even a 600-foot drive in fairly loose sand is entirely possible. The experimental driving of a shoestring sand would be of interest. In many fields it may be necessary to secure the removal of legal obstacles to the testing of wet recovery methods.

SOUTHWEST WILDCATS

(Continued from Page 52)

to 2,452 feet and test salt water and plugged back to 2,443 and tested salt water again, being unable to lower more than 1,000 feet. It is plugging back again to 2,440 and will make another test.

Gonzales County

Bristol Oil & Gas Co. is drilling at about 800 feet in the No. 1 Denman, in the A. Zumwalt Survey, in Gonzales County, near Ottine. L. L. Jones is drilling at below 1,000 feet in his No. 1 Lamkin, in Gonzales, south of Waelder.

Guadalupe County

J. M. Davis has erected a derrick on the Weinert farm in Guadalupe County, north of Deguin. The Davis test on the Pooley farm, in northern Guadalupe County, near Staples, is drilling at 1,515 feet and is in the Georgetown. The chalk was found thin in the well and though it hit the top of the chalk low it went out of it at much more favorable depth. It should be down to and testing the Edwards within another week.

Jim Hogg County

Moody Oil Co.'s No. 1 Palacious, on Block 13 of Survey 297 in Jim Hogg County, is drilling at a little below 1,600 feet. Hazlitt-Simmons' No. 1 Schroeder, in Block 10 of Survey No. 16, is standing at 100 feet waiting for water. Hoad and others' No. 1 Palacious, on Survey 247, several miles southeast of Randado, is drilling at 1,204 feet. National Oil Co.'s No. 1 Allen, on the Allen ranch and in Survey 23, is on a rock at 800 feet. O'Byrne and others, after setting and cementing 10 inch casing at 1,030 feet in the No. 1 Palacious on Survey 230, several miles south of Randado, has resumed drilling.

Karnes County

Earl B. Reynolds has resumed drilling his No. 2 Butler in Karnes County, between Runge and Kennedy, after setting 12-inch surface casing.

Kimble County

Dixie Oil Co.'s No. 1 Bode is rigging up in Kimble County 16 miles northwest of Junction.

Kleberg County

Humble Oil & Refining Co. has made two new locations on the Dennett farm in Kleberg County, southeast of Kingsville, where it has completed three producing wells. The new locations are to the north of the three producers. Humble discovered a pool here on the Gulf Coast last year and owns all the acreage for several miles around.

Live Oak County

Mid-Kansas Oil & Gas Co. has abandoned at 2,602 feet its No. 1 Drummond, in the John Conway Survey in northern Live Oak County, near Fant City. It had a minor showing of oil higher up in the log but at 2,602 feet was dry.

Medina County

Arnett Oil Co.'s No. 4 Nixon, in Medina County, southeast of its No. 1, has been having streaks of rock and oil-bearing sand from 924, where it set casing on a rock. The log is running different from the producing wells above. At 1,072 feet it had considerable oil sand. It is nearer the Adams gas wells on farther south and looks like it had new possibilities. The test is not completed. Golden West Oil Co.'s No. 3 Viola Wilson, in the Ina Field, is spudding in. Western Gas & Fuel Co. is drilling at 500 feet in its No. 1 Chandler, south of the Henderson & Holden gas wells on the Adams tract, and is preparing to move in tools on the No. 1 Adams, north of the gas wells. Sprage and others are plugging back in the No. 1 Redus, on Survey 92, after testing salt water at about 1,100 feet. J. R. McCaldin is drilling at 2,726 feet in his No. 1 Thompson, west of Devine. Golden West Oil Co.'s No. 1 Joseph Courand, southwest of Castroville is drilling at 800 feet. Alamo Drilling Co.'s No. 1 Kenedy, in western Medina County, is drilling at 380 feet. Ina Oil Co. is coring in the Edwards at below 1,950 in the No. 1 Hoffman and is drilling at about 800 feet in the No. 1 Finger.

McMullen County

Coyle-Concord Oil Co. has replaced the derrick in southwestern McMullen County on the M. Martin farm that was destroyed by cyclone and is ready to spud in. Location is in John Verrejo Survey No. 215 and is 2,100 feet from the northwest line and 900 feet from the northeast line. George M. Ball is drilling below 800 feet in the No. 1 Kuykendall, in northwestern McMullen County.

San Patricio County

John Sigmund No. 8 McCampbell is drilling at 1,300 feet. It is in San Patricio County north of Aransas Pass.

Starr County

Ramsey-Maxey Oil Co.'s No. 1 Kelsey in Starr County is drilling at 1,060 feet after testing salt water. Dauchy & Bryant are drilling at around 1,800 feet in their No. 1 Kelsey in Survey 125, having recently resumed work. T. W. McCarley and others have erected a derrick in Starr 150 feet from the south and west lines in Survey 918 located northeast of Rio Grande City. Rig will be moved in shortly.

CENTRAL TEXAS AND PANHANDLE LOCATIONS

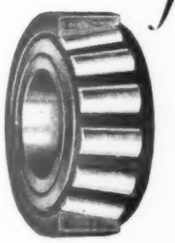
(Continued from Page 46)

feet south and 1,050 feet east of NW cor. Section 1, G. C. & S. F. Survey, A-528; No. 16, 1,551.9 feet south and 450 feet east of NW cor. Section 1, G. C. & S. F. Survey, A-528. Harry Jofee and others No. 4 T. F. Mitchell, 150 feet north and west of SE cor. Lot 4, T. F. Mitchell Subdivision located in Patience Castleman Survey, A-36. W. A. Patterson's No. 1 L. F. Douglas, Section 2, 1,275 feet north and 750 feet east of SW cor. Section 2, S. A. & M. G. Survey, A-675. Petroleum Investment Co.'s No. 21 J. A. Fisher, 450 feet north and east of SW cor. Lot 7, J. A. Fisher Subdivision and located Section 24, H. & G. N. Survey, A-399. Rubsan & Hunter's No. 1 W. D. McClure-C, 346.8 feet north and 910 feet east of SE cor. Section 6, G. C. & S. F. Survey, A-363. The Texas Company's No. 307 W. T. Waggoner, 217 feet south and 522 feet west of SW cor. Section 13, H. T. & B. Survey, A-137, and located H. T. & C. Survey No. 148, A-784; No. 309, 773 feet north and 668 feet east SW cor. Section 13, H. T. & B. Survey, A-137. Texhoma Oil & Refining Co.'s No. 19 J. L. and T. J. Waggoner, 150 feet north and 700 feet west of SE cor. Lot 11, Section 11, B. S. & F. Survey, A-387.

Wilbarger County

Empire Gas & Fuel Co.'s No. 48 W. H. Stephens, 400 feet north and 480 feet east of SW cor. NE NE, Section 83, Block 4, H. & T. C. Survey; No. 50, 540 feet south and 490 feet west of NE cor. Section 83, Block 4, H. & T. C. Survey. Magnolia Petroleum Co.'s No. 55 F. A.

Infallible Bearings for Pumping Units



Pumps must not fail. The responsibility rests largely on the bearings of the pumping units. They must withstand some of the heaviest radial loads found in machinery. They must also take high thrust loads both on the driving worm and on the crank mounting. A combination of the most highly perfected design and material is certainly called for.

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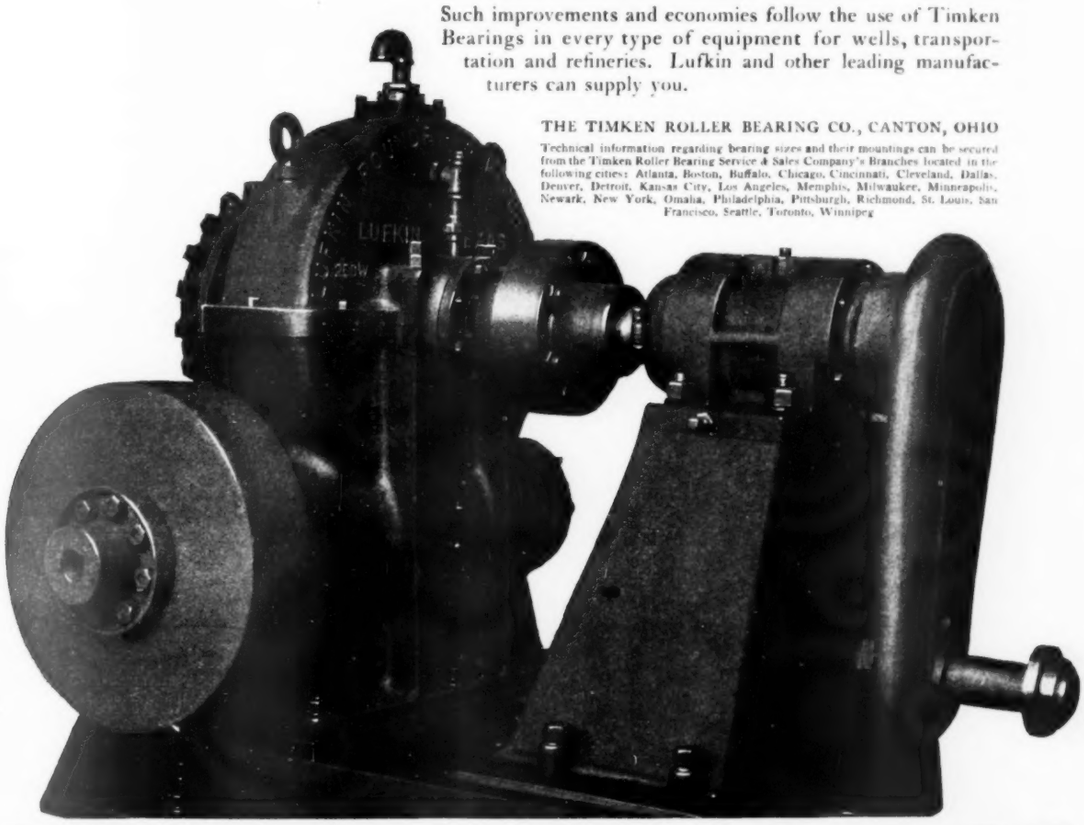

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Sumner, 1,450 feet north and 900 feet west of SE cor. Section 17, Block 3, H. & T. C. Survey. Roxana Petroleum Corp.'s No. 1 H. L. Coleman, 2,461 feet north and 1,500 feet east of SW cor. Section 36, Block 15, H. & T. C. Survey. American Refining Co.'s No. 1 J. H. Turbeville-A, 544 feet north and 1,422 feet east of SW cor. south 72.4 acres J. T. Turbeville 172.4-acres tract out of Robert Carson Survey No. 158, A-92; American Refining Co. and others' No. 3 J. H. Turbeville-A, 2,044 feet south and 150 feet west of NE cor. Section 150, Robert Carson Survey, A-85. Bridwell & Heydrick's No. 3 J. E. Parrish-A, 908 feet north and 150 feet east SW cor. their 40-acre "A" lease out of south half Section 2, S. P. R. R. Survey, A-1,004. G. J. Brown's No. 3 J. J. Perkins and others, 600 feet north and 150 feet west of SE cor. Section 15, D. C. & S. L. Survey, League 3, A-117. S. Kruger and L. Wilson's No. 1 J. H. Turbeville, 150 feet north and west SE cor. north 43.5 acres west 90.5 acres, Section 150, Robert Carson Survey, A-85. Magnolia Petroleum Co.'s No. 10 W. F. Parrish-B, 490 feet north and 450 feet west of SE cor. SE SW, Section 26, Block 1, H. & T. C. Survey, A-1,197; No. 11, 490 feet north and 810 feet west of SE cor. SE SW, Section 26, Block 1, H. & T. C. Survey, A-1,197; No. 6 Miss Ray Rutty-B, 150 feet south and 160 feet east of NW cor. south 20 acres NE 40 acres of May Rutty 160-acre tract out of J. T. O'Reilly Survey No. 24, A-360. Marland Oil Co.'s No. 3 J. H. Turbeville, 750 feet south and 150 feet west of most northerly NE cor. their 80-acre lease out of R. Carson Survey, No. 172, A-106. S. McGregor and others' No. 3 Henry Ford, 990 feet north and 150 feet west SE cor. West Bryan Survey No. 4, A-35. Shappell Oil Co.'s No. 1 J. L. Jackson, 150 feet north and east SW cor. south 68 acres of J. L. Jackson 104-acre tract Lot 4, Section 11, A. T. N. C. L. Survey. Simms Oil Co.'s No. 5 J. H. Turbeville-A, 150 feet north and 1,520 feet west of SE cor. north 80 acres Section 172, Robert Carson Survey, A-106. Simms and Consolidated Oil Co.'s No. 1 J. H. Turbeville, Section 146, 150 feet south and east of NW cor. SE Section 146, Robert Carson Survey, A-96. The Texas Company's No. 3 J. H. Turbeville-C, 442 feet south and 318 feet east NW cor. their 40-acre "C" lease out of R. Carson Survey No. 172, A-106; No. 4, 150 feet south and 792 feet east of NW cor. their 40-acre "C" lease out of R. Carson Survey, No. 172, A-106; No. 5 L. F. Wilson-B, 415 feet north and 450 feet west of SE cor. south 25 acres east 50 acres, north 100 acres of J. T. O'Reilly Survey, No. 24, A-360. L. T. Burns' No. 1 J. W. Reese, 150 feet south and west of NE cor. south 80 acres of Section 29, Club Ranch Subdivision. Gates and others' No. 7 W. H. Thomas, 150 feet south and west of NE cor. their lease out of Lot 6, north subdivision N. Thomas Survey, A-454. Jeffers & Newby's No. 3 W. L. Andrews, 750 feet north and 450 feet east SW cor. their 37-acre lease out of William Spavin Survey, A-371. King & Looney's No. 2 Mrs. O. Slopansky, 200 feet north and 150 feet east SW cor. east 26 acres south 106 acres Section 64, Club Ranch Subdivision. Lewis Oil Corp.'s No. 5 H. O. Prideaux, 105 feet south and 1,650 feet east of NW cor. west 200 acres of H. O. Prideaux land out of A. Rohus Survey, A-1,126. Mag-6, 600 feet south and 1,950 feet east NW cor. west 200 acres H. O. Prideaux land out of A. Rohus Survey, A-1-126. Magnolia Petroleum Co.'s No. 8 I. C. Little and others, 150 feet south and 750 feet west NE cor. their lease out of I. Holman Survey, A-162; No. 15, 750 feet south and 150 feet west NE cor. Lot 2, Crawford Subdivision, I. Holman Survey, A-62. Mid-Tex Oil Co.'s No. 1 J. M. Baggett, 1,470 feet south and 750 feet west NE cor. east 40 acres, north 80 acres of J. M. Baggett 210-acre tract and located in the Thomas McCoy Survey, No. 26, A-645. Plains Oil Co.'s No. 3 R. O. Prideaux, 150 feet north and 450 feet east SW cor. their 42-acre lease out of John Dorsey Survey, A-121. Simms Oil Co. and L. T. Burns' No. 2 J. H. Turbeville, 564 feet south and 816 feet west of NE cor. Section 21, Jefferson County School Land, A-240. Sun Oil Co.'s No. 4 H. E. Brown, 150 feet south and 750 feet west NE cor. Lot 1, Thomas McCoy Survey, A-269. Texhoma Oil & Refining Co.'s No. 3 D. L. Wolf-A, 150 feet south and 1,192 feet west NE cor. east 160 acres of J. Poitevent Survey No. 2, A-1,310. Texhoma, Fisher & Gilliland's No. 1 J. F. Rogers, 450 feet north and 150 feet west SE cor. west 14 acres, north 80 acres and west 160 acres Section 2,406, T. E. & L. Survey. Texhoma Oil & Refining Co. and others' No. 1 W. H. Thomas, 150 feet south and east NE cor. Section 111, Club Ranch Subdivision and located in No. 7 north subdivision N. Thomas Survey, A-454.

Montague County

Arco Oil Co.'s No. 2 N. L. Howard and others, 150 feet south and 4,650 feet west of NE cor. J. Chambliss Survey, A-123. Allday Oil Corp.'s No. 1 J. G. Howard, 150 feet north and west of NE cor. Section 88, located in Section 100 (being east 76 acres of Section 89) Kaufman County School Land, A-407. Camp Oil & Gas Co.'s' No. 1 Snapp Estate, 150 feet north and west of SE cor. S. T. Snapp 200-acre tract out of R. Crawford Survey, A-149. Humble Oil & Refining Co.'s No. 6 J. W. Maddox, 150 feet south and west of NE cor. their 80-acre lease out of C. W. Thompson Survey, A-741. Newblock Oil Co.'s No. 5 J. W. Maddox, 1,583 feet north and 1,208 feet east SW cor. J. W. Maddox 191-acre tract out of J. Chambliss Survey, A-123. Pure Oil Co.'s No. 2 J. W. Maddox-C, 200 feet north and east SW cor. their 50-acre lease "C" Lot 4, C. W. Thompson Survey, A-741. Texhoma Oil & Refining Co.'s No. 2 E. J. Bouldin-A, 1,240 feet north and 150 feet west SE cor. their 80-acre "A" lease out of J. Chambliss Survey, A-123; No. 11 N. J. Howard and others', 2,239 feet north and 208 feet east of SW cor. their 150-acre lease out of J. Chambliss Survey, A-123; No. 8, 3,822 feet north and 150 feet east of SW cor. N. J. Howard and others' 831-acre tract out of J. Chambliss Survey, A-123; No. 9, 150 feet south and east NW cor. their 120-acre "A" lease out of J. Chambliss Survey, A-123. Texhoma Oil & Refining Co.'s No. 1 J. W. Maddox-A, 150 feet south and 111 feet east NW cor. east 36 acres of Lot 5, C. W. Thompson Survey, A-741; No. 5, J. W. Rowland, 150 feet south and west of most easterly NE cor. their 71-acre lease out of J. Chambliss Survey, A-123; No. 6, 150 feet north and 200 feet east SW cor. their 71-acre lease out of J. Chambliss Survey, A-123; No. 7, 150 feet north and 924 feet west SE cor. their 71-acre lease out of J. Chambliss Survey, A-123.

Cooke County

Hooser Oil Co.'s No. 2 J. A. Dennis, 150 feet north and 959 feet west SE cor. east 160 acres of north half T. J. Mose Survey, A-736. Maer-Staniforth and others' No. 1 G. C. Dennis, 1,506 feet north and 461 feet west of SW cor. Charles Lockhart Survey, located in Santiago Hernandez Survey, being 160 feet south and 150 feet east NW cor. their 4½-acre lease.

Jack County

Wallace & Nichols' No. 1 E. E. Gardner, 450 feet south and 150 feet west most southerly NE cor. E. E. Garner 1,099.5-acre tract out of E. Smith Survey, A-524.

Young County

Burton & Texhoma's No. 4 S. M. J. Benson, 620 feet south and 450 feet east of NW cor. their 33-acre lease out of south half Section 1,450, T. E. & L. Survey. Reed and others' No. 5 J. W. Jack, 750 feet south and 450 feet east of SW cor. Section 23, Young County School Land, A-1,284. Roberts Oil Co.'s No. 11 E. Rogers, 150 feet north and east of SW cor. south 100 acres of north 200 acres of Section 166, T. E. & L. Survey; No. 12 E. Rogers, 1,800 feet north and 2,700 feet west SE cor. Section 166, T. E. & L. Survey. Ruff and others' No. 2 Graham Stewart, 2,190 feet south and 186 feet west NE cor. David Dawson Survey, A-76. Roeser & Pendleton's No. 1 W. B. McClesky, 4,700 feet north and

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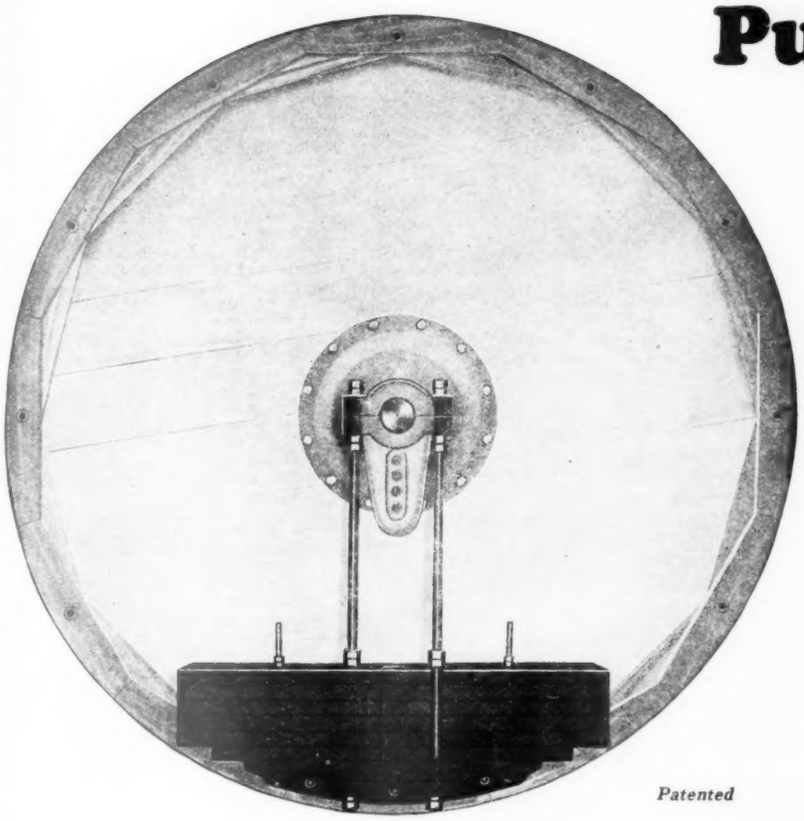

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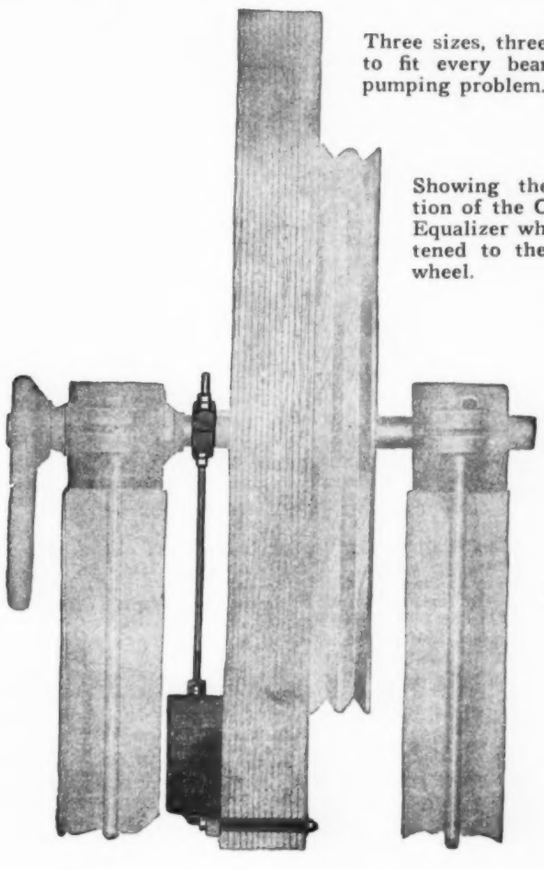
Every engine is equipped with a flywheel. "The function of a flywheel is to store up and to restore the periodical fluctuations of energy given to or taken from an engine or machine, and thus keep approximately constant the velocity of rotation." The motion of a flywheel is centrifugal—it rotates—it equalizes.

To put a flywheel on a string of sucker rods is obviously impractical. However, it has been found possible to make the bandwheel serve the purpose of a flywheel, thus also increasing its own efficiency. The motion of a bandwheel is centrifugal—it rotates, and by placing an O. C. S. Equalizer properly upon it, the bandwheel becomes a flywheel—it stores up energy created by the falling rods, and carries it over to the load side of the revolution when the rods and load are being lifted, maintaining a smooth, even motion throughout the cycle.

The O. C. S. Equalizer is more than a counterbalance—it equalizes.

Three sizes, three types, to fit every beam well pumping problem.



Showing the location of the O. C. S. Equalizer when fastened to the bandwheel.

In the Mid-Continent:
All Supply Stores Everywhere

In California:
Hillman-Cooney, Inc.
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THE OIL COUNTRY SPECIALTIES MFG. CO.
COFFEYVILLE, KANSAS

1,500 feet east SW cor. F. L. Green Survey, A-105.

Jones County

Gibson & Johnson's No. 1 Mrs. J. V. Wright, 660 feet north and 1,650 feet east SW cor. Section 13, Block 14, T. & P. Survey. Marland Oil Co.'s No. 1 S. R. Cox, 660 feet south and east of NW cor. Section 72, Block 14, T. & P. Survey. Leigh Taliaferro's No. 1 King, center of SE N. Scott Survey, No. 15.

Shackelford County

E. R. Brann's No. 1 S. S. and A. C. Manley, 660 feet south and west NE cor. Section 46, Block 14, T. & P. Survey. D. J. Chronic's No. 1 W. C. Goodwin, 660 feet north and east SW cor. NE SW, Section 57, Block 13, T. & P. Survey. Gwinnup and others' No. 1 William Poindexter, 660 feet north and west SE cor. SE NW, Section 47, Block 11, T. & P. Survey. Hodges & Engle's No. 4 J. B. Matthews, 450 feet south and east NW cor. SE NW, Section 29, Block 10, E. T. R. R. Survey. Hope Petroleum Co.'s No. 12 W. D. Reynolds, 1,095 feet north and 150 feet east SW cor. NW, Section 24, Block 11, T. & P. Survey. Johnson and others' No. 1 L. H. Hill, 150 feet north and west of SE cor. NW Section 1, Lunatic Asylum Lands. Mid-Kansas Oil & Gas Co.'s No. 1 W. C. Goodwin, 200 feet north and 1,120 feet west SE cor. Section 76, Block 13, T. & P. Survey. Mississippi Valley Oil Co.'s No. 1 J. S. Manley, 660 feet north and west SE cor. NE NE, Section 36, Block 14, T. & P. Survey. Ralph Reed's No. 1 E. H. Holstein, 660 feet north and east SW cor. SE SE, Section 38, Block 14, T. & P. Survey. Roeser & Pendleton's No. 24 W. I. Cook-A, Section 84, 450 feet north and 750 feet west SE cor. NE SE, Section 84, Block 10, E. T. R. R. Survey; No. 1 W. I. Cook-A, Section 116, 660 feet north and west of SE cor. SE NE, Section 116, Block 10, E. T. R. R. Survey; No. 1 J. S. Scott, Section 172, 660 feet south and east NW cor. NW NW, Section 172, Block 10, E. T. R. R. Survey; No. 1 J. S. Scott, Section 174, 660 feet south and west NE cor. NE NE, Section 174, Block 10, E. T. R. R. Survey. Sinclair Oil & Gas Co.'s No. 7 J. H. Nail, 2,640 feet north and 150 feet west SE cor. west half Section 109, Block 10, E. T. R. R. Survey; No. 8, 2,640 feet north and 150 feet east SW cor. east half Section 152, Block 10, E. T. R. R. Survey. H. Stalker Oil Co.'s No. 1 W. C. Goodwin, 660 feet north and east SW cor. SW NW, Section 68, Block 13, T. & P. Survey. Thurman & Maxwell's No. 1 W. C. Goodwin, 660 feet north and west SE cor. NE SW, Section 60, Block 13, T. & P. Survey.

Stephens County

Humble Oil & Refining Co.'s No. 6 H. W. Hart, 1,200 feet north and 700 feet east SW cor. Section 2,065, T. E. & L. Survey. Sun Oil Co.'s No. 6 W. E. Carey, 370 feet south and 750 feet west NE cor. NW Section 52, Block 5, T. & P. Survey.

Palo Pinto County

Moore & Snegold's No. 4 S. J. Stuart, 1,000 feet south and 650 feet west NE cor. Section 62, Block 4, T. & P. Survey. Meyer & Williams' No. 1 Satterfield Heirs, 900 feet south and 100 feet west NE cor. W half Section 94, Block 4, T. & P. Survey.

Eastland County

Magnolia Petroleum Co.'s No. 12 P. O. Harris, 275 feet south of T. & P. right of way and 150 feet west of east line P. O. Harris 120-acre tract out of Mrs. M. Finch Survey.

Callahan County

Dixie Drilling Co.'s No. 1 W. H. Rose, 2,640 feet south and 660 feet west NE cor. west half B. B. B. & C. Survey, No. 100. J. K. Hughes Development Co.'s No. 1 W. Franke, 150 feet south and 750 feet west NE cor. S half Section 72, Comal County School Land. N. N. Pardee and others' No. 1 Rushing Estate, 660 feet south and east NW cor. SE of B. B. B. & C. Survey, No. 116. T. B. Slick's No. 2 L. A. McDonough, 150 feet south and east of NW cor. L. A. McDonough 128-acre tract R. Edwards Survey, No. 778; No. 3, 150 feet south and 1,010 feet east NW cor. L. A. McDonough 128-acre tract out of R. Edwards Survey, No. 778.

Taylor County

Sanger Oil & Refining Co.'s No. 1 I. C. Cox, center John Walker Survey, No. 56.

Mitchell County

The California Co.'s No. 6 W. R. Womack, 330 feet north and 2,310 feet west SE cor. Section 11, Township 1n, Block 28, T. & P. Survey.

Howard County

Lockhart & Carey's No. 2 Otis Chalk, 1,402 feet north and 2,310 feet east of SW cor. Section 95, Block 29, W. & N. W. R. R. Survey.

Winkler County

McCullough Oil Co.'s No. 1 Tobe Morton, CEL, Section 20, Block B-2, School Land. Zoch and others' No. 1 John Sealy, C SW Section 73, Block A, Gunter & Murson, Maddox Brothers and Anderson Survey.

Ector County

The Exploration Co.'s No. 1 J. D. Seator, C SW, Section 10, Block 45, Townsite 1s, T. & P. Survey.

Runnels County

Red Bank Oil Co.'s No. 1 W. W. Fowler, 1,320 feet south and 150 feet east NW cor. John H. Wills Survey, No. 514.

Callahan County

Burke-Greis Oil Co.'s No. 5 J. C. Dibrell, 200 feet north and midway east and west their 40-acre lease, J. W. Hicks Survey, No. 265. H. H. Whitmire's No. 1 W. T. Smith, 1,504 feet north and 2,610 feet west, SE cor. Smith 428-acre tract, N. B. Waters, Survey, No. 697.

Coleman County

Logan and others' No. 1 S. M. Russell, 250 feet north and east SW cor. east 215 acres of Russell 295.2-acre tract, Lots 16 and 17, John Martin Survey, No. 752.

Brown County

J. S. Cosden's No. 2 R. L. Westerman, 150 feet north and 450 feet west SE cor. R. L. Westerman 172.5-acre tract out of the Mrs. N. B. Mitchell Survey, No. 150. P. L. Huffman's No. 5 Kilgore Brothers, 150 feet north and 1,350 feet east SW cor. east half H. McClure Survey, No. 152; No. 1 Roy Hickman, 1,283 feet nor h and 150 feet west of most southerly SE cor. Roy Hickman 914-acre tract, T. Benson Survey, No. 783; No. 4 J. C. Kilgore-A, 200 feet south and east NW cor. E half Section 3, J. Delgado Survey, No. 785; No. 7 J. C. Kilgore-B, 1,358 feet south and 200 feet east NW cor. Section 3, J. Delgado Survey, 785; No. 8, 1,744 feet south and 200 feet east NW cor. Section 3, J. Delgado Survey, No. 785; No. 9, 200 feet south and 655 feet east NW cor. Section 3, J. Delgado Survey, No. 785; No. 10, 587 feet south and 565 feet east NW cor. Section 3, Delgado Survey, No. 785; No. 11, 200 feet south and west NE cor. west half Section 3, J. Delgado Survey, No. 785; No. 10 Kilgore Brothers-B, 1,740 feet south and 200 feet west NE cor. east 70 acres Section 2, J. Delgado Survey, No. 785; No. 11, 2,124 feet south and 200 feet west NE cor. east 70 acres Section 2, J. Delgado Survey, No. 785. No. 12, 200 feet south and east NW cor. east 70 acres same section; No. 13, 584 feet south and 562 feet west NE cor. same 70 acres; No. 14, 200 feet north and 523 feet east SW cor. their 20-acre lease in T. Benson Survey, No. 783; No. 15, 200 feet north and west SE cor. their same 20 acres; No. 8 E. P. and W. H. Kilgore-C, 200 feet north and 996 feet west SE cor. their 30-acre lease "C," same survey; No. 9, 200 feet north and east SW cor. their same 30-acre lease. H. W. Drilling Co.'s No. 8 W. A. Prater, 450 feet south and 150 feet west NE cor. W. A. Prater 175 acres in William B. Travis Survey, No. 148. Kane Production Co.'s No. 2 J. I. Foster, 150 feet north and east SW cor. their 26 acres in T. Benson Survey, No. 783; No. 3, 450 feet north and 150 feet west SE cor., same tract; No. 4, 750 feet north and 150 feet west, SE cor., same tract; No. 5, 1,050 feet north and 150 feet west, SE cor., same tract. Midwest Exploration Co.'s No. 2 L. V. Eddington, 150 feet south and 450 feet west NE cor. 40-acre lease in R. G. Milliken Survey, No. 142. C. O. Moore and others' No. 1 J. H. Teague, 600 feet south and 150 feet west, NE cor. J. H. Teague 167 acres, William Mills Survey, No. 149. Sawyer and others' No. 1 W. G. White estate, 600 feet north and 150 feet east SE cor. J. C. Ryan Survey, No. 635 and located in D. B. Vernon Survey, A-935. E. L. Smith Oil Co.'s No. 1 Carson & Grantham, 750 feet north and 150 feet east SW cor. of Carson & Grantham's 866 acres in R. Honeycutt Survey, No. 623. West and H-Y Oil Co.'s No. 13 J. W. Newton, 910 feet south and 510 feet east NW cor. J. W. Newton's 361 acres, Robert Mitchell Survey, No. 141. Williamson and others' No. 2 W. M. Wooldridge, 465 feet north and 230 feet west NE cor. H. A. Newton's 206 acres in R. Mitchell Survey, No. 141, and located on W. M. Wooldridge's 320-acre tract in E. T. R. R. Survey, No. 157. B. Christams' No. 1 T. C. Brown, 150 feet north and east, most southerly SW cor. T. C. Brown's 170 acres in Section 36, Kerr County school land, No. 278. E. Morris' No. 1 L. B. Young, 150 feet NW of SE line and 150 feet SW of NE line, Lot 4, J. Grant Survey, No. 136. C. D. Nelson's No. 1 J. W. Sneed, 400 feet north and 150 feet east SW cor. J. W. Sneed's 147 acres in Section 9, H. T. & B. Survey.

McCulloch County

D. E. Gibson's No. 1 P. E. Rice, 650 feet north and 1,500 feet west SE cor. Halzgrife Survey, No. 943. Junior Oil Co.'s No. 1 T. J. Beasley, C SE NW, Section 279, H. & T. C. R. R. Survey. McClung and others' No. 1 J. T. Smith, 450 feet north and east, SW cor. J. W. Cooke Survey, No. 196.

Upton County

Dixie Oil Co.'s No. 8 A. S. Burleson, midway NE and SW and 1,650 feet SE of NW line of John Midever Survey, No. 2, A-749. Independent Oil & Gas Co.'s No. 3 Emma Woolsey, 1,240 feet SE of most northerly north corner and 330 feet SW of NE line, Section 3, G. C. & S. F. Survey, A-229. Marland Oil Co.'s No. 1 E. S. Hughes D, C SE, Section 93, F. Rooney Survey, Block Y.

Crane County

Marland Oil Co's No. 2 E. S. Hughes-C, 330 feet south and east NW cor. east 80 acres, NE, Section 86, Block X, C. C. S. D. & R. G. N. G. Survey; No. 1 E. S. Hughes-E, 330 feet north and east SW cor. Section 88, Block Y, same survey. Zweifel and others' No. 1 Cowden Brothers, 250 feet north and west SE cor. Section 16, Block X, same survey.

Pecos County

Benedum & Trees' No. 1 J. C. Trees, 990 feet north and west SE cor. Section 50, Block 8, H. & G. N. Survey. Buel and others' No. 1 W. W. Batchelor, 660 feet south and 1,320 feet west NE cor. Section 89, G. C. & S. F. Survey.

Crockett County

Magnolia Petroleum Co.'s No. 2 J. M. Shannon, 330 feet north and west SE cor. Section 9, Block BB, E. L. & R. R. Survey.

Kimble County

Dixie Oil Co.'s No. 1 Harrison, 300 feet SE of NW cor. Charles Hart Survey, No. 440 and 900 feet SW of NE line J. S. Patterson Survey, No. 80.

Changes in Names and Locations

Hutchinson County

Amerada Petroleum Corp.'s No. 5 J. A. Whittenburg-B, 990 feet north and 330 feet east of SW cor. NW, Section 89, Block Z, G. C. & S. F. Survey. Barnsdall Oil Corp.'s No. 1 J. E. Pritchard has been changed to No. 1 Sallie Pritchard. Canyon Oil & Gas Co.'s No. 4 J. A. Whittenburg, location previously given, has been changed to No. 5 and No. 5 should be No. 4. J. K. Hughes Development Co.'s No. 3 W. L. Kingsland B, 330 feet north and 990 feet east SW cor. SW, Section 6, Block B-4, D. & S. E. Survey; No. 4, 330 feet north and 990 feet west SE cor SW, Section 6, Block B-4. McMan Oil & Gas Co.'s No. 1 Whittenburg-Archer has been changed to No. 2 and No. 2 changed to

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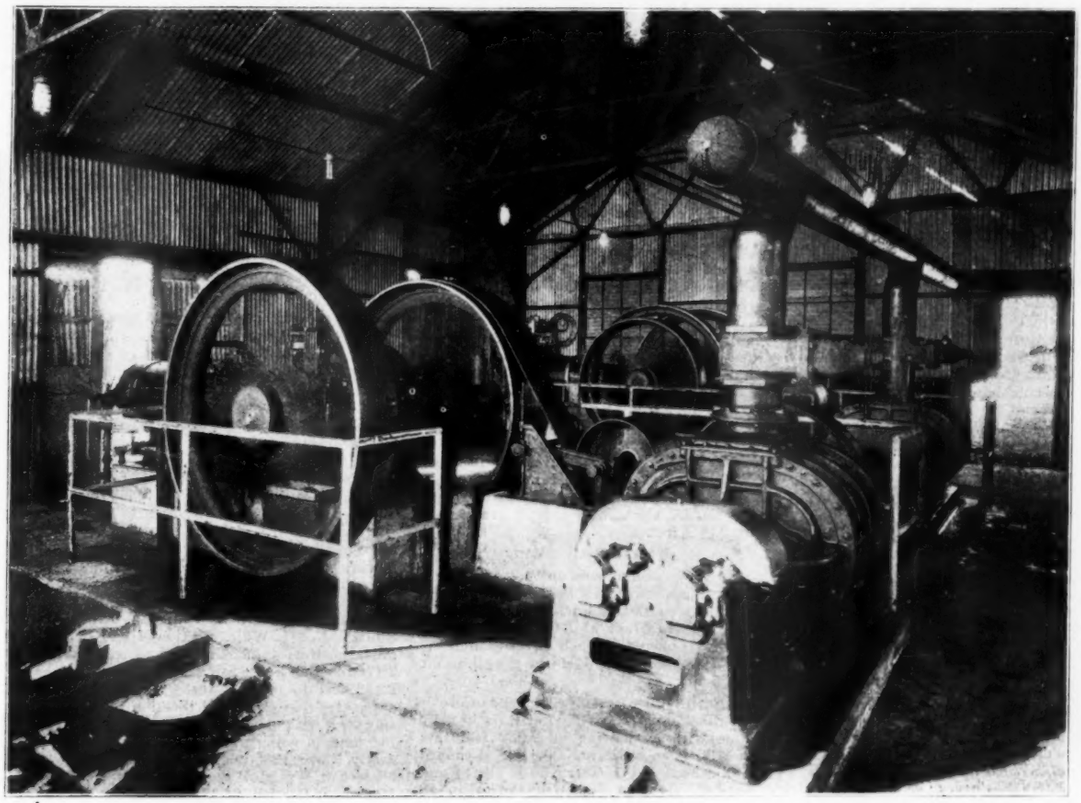
ROOTS



Roots Gas Pumps in the Skelly Plant at Davenport, Okla.

The Value of Dependability

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ROTARY POSITIVE BLOWERS
GAS EXHAUSTERS
PUMPS AND VACUUM PUMPS
FLEXIBLE COUPLINGS
BLAST GATES
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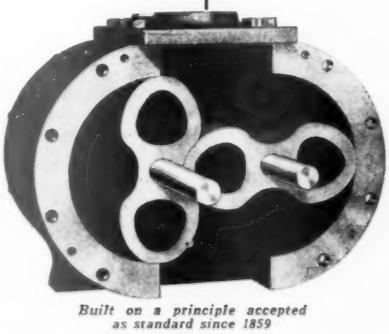
The value of *knowing* that each unit in your plant can "stand the gaff" can really be measured in dollars and cents.

Many users of Roots Gas Pumps have measured, by actual figures, their savings in the elimination of shut-downs and in the reduction of repairs and maintenance expense.

A Roots Gas Pump for forcing still vapors through absorption tanks to the burners, or for delivering natural gas to the compressors at a definite pressure —or for any other purpose—is assurance of a minimum of trouble and expense.

The picture above shows two Roots units in operation and, as the picture was being taken, two more were being unloaded. Re-orders are the best recommendation.



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DEPT. 18
CONNERSVILLE, IND.

Chicago Office 128 S. Michigan Ave
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No. 1. Phillips Petroleum Co. and Gibson Oil Corp.'s No. 9 J. A. Whittenburg, 330 feet north and east SW cor. Section 63, Block 46, H. & T. C. Survey. Sunny Jim Oil Co.'s No. 2 H. W. Pitts, 330 feet south and east of NW cor. Section 7, Block M-21, T. C. R. R. Survey.

Wichita County

R. R. Clark's No. 5 Ward & Todd has been changed to Clark & Howell's No. 1 Ward & Todd. R. R. Clark and others' No. 8 Ward & Todd has been changed to Clark & Howell's No. 2 Ward & Todd.

Archer County

Bridwell & Heydrick's Nos. 1 and 2 J. E. Parrish are now Nos. 1 and 2 J. E. Parrish-A; No. 3 J. E. Parrish has been changed to No. 4 J. E. Parrish-A. Bridwell & Heydrick have taken over Scott & Gose's Nos. 1 to 9 J. E. Parrish and call this their "B" lease. F. S. Whitman's Nos. 1 and 2 Henry Ford have been changed to S. McGregor's Nos. 1 and 2 Henry Ford. Shappell Oil Co.'s No. 4 L. F. Wilson-C, 150 feet south and 450 feet east of NW cor. Lot 9, Section 23, A. T. N. C. L. Survey. T. H. Jones' No. 1 J. H. Turbeville has been acquired by the Simms Oil Co.

Cooke County

The well formerly carried as C. C. Lanier and others' No. 1 J. A. Dennis should be Hooser Oil Co.'s No. 1 Dennis. C. C. Lanier and others' No. 1 A. Hyman is located 450 feet south and 629 feet west of NE cor. S half T. J. Moss Survey, A-736; No. 2, 500 feet south and 627 feet west of NE cor. S half, same property; No. 3, 150 feet south and 660 feet west NE cor. S half, same survey.

Shackelford County

Hope Petroleum Co.'s No. 10 W. D. Reynolds, 465 feet north and 150 feet east of SW cor. NW, Section 24, Block 11, T. & P. Survey; No. 11, 780 feet north and 150 feet east of SW cor. NW, same section. Jackson and others' No. 1 C. Flippen, 150 feet north and east of SW cor. SE, Section 35, Block 11, T. & P. Survey, was formerly Terry and others' No. 1 Flippen. Hays & Howland's No. 1 J. B. Matthews, C SE NW, Section 58, Block 10, E. T. R. R. Survey, is now the New Oil Co.'s No. 1 J. B. Matthews.

Eastland County

Parton and Myers' No. 1 J. L. Fox, 50 feet south and 783 feet west of NE cor. Lot 45, Leagues 3 and 4, McLannan County school land.

Callahan County

T. B. Slick's No. 3 B. B. Bond, 240 feet north and 450 feet east of SW cor. of east 17.5 acres of Slick's 27.5-acre tract in W. G. Anderson Survey.

Brown County

Midwest Exploration Co.'s No. 1 L. V. Eddington, was formerly Ingleright and others' No. 1 Eddington.

MEXICAN FIELDS

(Continued from Page 48)

at 1,168 feet and its No. 278 is rigging. Mexican Gulf Oil Co.'s No. 22 Flores is in hard shale and lime at 1,060 feet. Transcontinental Petroleum Co.'s No. 218 Lot 4 Cacalilao has cemented 8-inch in gray lime at 1,215 feet; it is testing No. 247 for production and has a derrick up for No. 273. In the Panuco, Transcontinental's operations follow: Its No. 24 Lot 1 Tanchicuin, is in hard gray shale at 1,150 feet; its No. 11, Lot 14, is in gray lime at 2,100 feet, and here and there in the old Panuco four more derricks are up over locations. Mordelo Vincent's No. 29, Lot 14, West Maguabes, has cemented 8-inch at 1,440 feet in the San Felipe.

The Ebano Field

In the Ebano sector the following obtains: Mexican Petroleum Co.'s No. 9 Ebano is in gray shale at 515 feet; its No. 47 Chijol is in gray lime at 1,420 feet; No. 49, same, has cemented 10-inch in the same formation at 1,260 feet; No. 43 La Dicha is in gray lime at 1,635 feet; No. 59-A has cemented 8-inch in gray lime at 1,140 feet; No. 108 is in blue mud at 650 feet; No. 111 is testing at 2,070 feet, while lime; No. 9 Mendez is in gray lime and shale at 1,700 feet; No. 11 is in gray lime at 2,265 feet; No. 103 Conteca is in gray lime at 1,570 feet, (corrected); No. 104 is in gray lime at 1,354 feet, and derricks are up over some nine locations, several of them having been awaiting permits for quite some time. National Lines' operations in this sector on its right of way follow: No. 101 Conteca is in gray lime at 1,545 feet; No. 105 is in the Tamasopa at 2,050 feet; No. 106 has cemented 8-inch in gray lime at 1,297 feet.

South Fields

In the south fields, Huasteca Petroleum Co.'s No. 73 Cerro Azul is in brown lime at 1,280 feet and its No. 82 is in blue shale at 1,750 feet. On Tierra Blanca, Huasteca's No. 74 is spudding; its No. 77 continues at 1,915 feet in gray and brown lime and its No. 80 is in brown shale at 310 feet. In Chapopote Nunez its No. 15 is in brown shale at 2,530 feet. Cortez Oil Corp.'s No. 7, Lot 199 Amatlan is in hard gray shale at 1,900 feet. International Petroleum Co.'s No. 54 Toteco is a derrick. Mexican Eagle Oil Co.'s No. 17 San Geronimo is in hard shale at 1,882 feet; its No. 2 Poza Rica is in hard gray shale at 1,005 feet and its No. 37 Furbero is in soft gray shale at 3,965 feet.

Northern Miscellany

In the miscellaneous northern fields the following obtains: In Los Esteros, American International Fuel Co.'s No. 31 is in hard gray lime at 3,057 feet; its No. 33 has cemented 8-inch in gray lime at 1,305 feet and No. 34 is in gray lime at 1,355 feet.

In the Corcovado sector, La Corona Petroleum Co.'s No. 25, Lot 6, is in gray lime with a showing at 2,022 feet; its No. 26 is in shale at 550 feet. Leonard and others' No. 1 Garruche is rigged and ready. Mexican Gulf Oil Co.'s No. 48 Chapacao is in shale at 133 feet and its No. 49 has cemented 8-inch in gray lime at 1,200 feet. Rich Mex Oil Co.'s No. 6, Lot D, is reaming to carry 8-inch to 1,850 feet, gray lime, where it will cement. Transcontinental Petroleum Co.'s No. 29, Lot 6, is rigged, waiting for permit.

In the Topila sector, La Corona Petroleum Co.'s No. 21 Topila is in Tamasopa at 2,704 feet. Cochrane and others' No. 13, Lot 20 Pas. de Aguacate, is in gray lime at 2,340 feet. Cia. Pet. Financiera, No. 4, Lot 14, Pac. de Aguacate, is in hard gray shale at 1,620 feet. Ita Mex Oil Co.'s No. 23 La Mula is in lime and shells at 1,710 feet. The Texas Company's No. 1, Lot 19 Pac. de Aguacate is spudding.

In the Limon sector, Cia. Pet. Franco Espanola (Marland) No. 33-A Limon is in shale at 275 feet; No. 46-A has cemented 8-inch in gray lime at 1,370 feet; No. 60-A is in lime at 2,910 feet; No. 62 is in shale and shells at 1,765 feet and No. 64 is in gray lime at 1,510 feet.

Recurring rains have again slowed field work throughout the operating districts.

N. LOUISIANA-ARKANSAS

(Continued from Page 48)

phy, Section 28-15-15, is drilling at 132 feet. The liner is being pulled from 2,046 feet at Sun Oil Co.'s No. 2 Hardin, Section 22-15-16. Surface casing was set at 150 feet at Sure Oil Co.'s No. 4 Snyder, Section 34-15-15. A derrick is up for The Texas Co.'s No. 8 Neeley, SW cor. NE NE, Section 27-15-16. Woodley Petroleum Co.'s No. 5 Richardson, Section 29-15-15, cored salt water sand at 2,593 feet.

In the Stephens district, Arco Oil Co.'s No. 1 Davis, Section 22-15-19, is waiting for orders at 1,560½ feet. J. D. Reynolds' No. A-1 Davis, Section 22-15-19, has been temporarily abandoned at 2,176 feet. Louisiana Oil Refining Corp. is drilling the plug at 1,505 feet at No. 1 Holton, Section 15-15-19. Ohio Oil Co.'s No. 1 J. M. Curry, Section 32-15-19, is drilling at 1,985 feet.

Columbia County

Gorden and associates' No. 6 Jones' Section 1-16-20 had sand at 2,218-33 feet and is waiting for a standard rig; No. 7 is drilling at 200 feet.

Nevada County

Autrey Oil Co.'s No. 1 McKinney, NE cor. NW SE, Section 9-14-21, is a rig. Six-inch casing was cemented at 1,130 feet at Bem's and associates' No. 1 Ellis, Section 2-14-21. Six-inch casing with a shoe is being set at 1,094 feet at W. F. Furen and associates' No. 1 Groves, Section 2-14-21. Humble's No. 4 Bodcau, Section 10-14-21, is drilling in hard lime at 2,595 feet. Humble's No. A-3 Ellis, Section 2-14-21, had sand at 1,156-63 feet and is waiting for a standard rig. A derrick is up for Southern's No. 1 Waters, NE cor. SE SW, Section 2-14-21. Zing and associates' No. 1 Moss, Section 12-14-21, is drilling at 1,050 feet.

Arkansas Wildcats—Union County

Union County's contribution to the wildcat failure list was two last week. Wingfield and associates' No. 1 Gallagher, Section 10-17-17, was abandoned in red shale at 3,007 feet. No test was made. Jones and Murphy's No. 1 Loutre Shingle Co., Section 5-19-14, was abandoned at 2,701 feet.

Arkansas Drilling Co.'s No. 1 Townes, Section 34-19-11, is coring at 2,503 feet. Matthews and associates' No. 1 Lewis, Section 14-19-12, is drilling at 1,920 feet. Natural Gas & Fuel Corp. and Atlantic's No. 1 Taylor, Section 23-18-17, is drilling in gumbo at 2,614 feet. Simms Oil Co.'s No. 1 Simmons, Section 9-18-13, cored sand at 2,503 feet. A. H. Stoltz's No. 1 Wait, Section 4-18-16, 2 miles northwest of Kinard, had sand at 2,176-92 feet and casing is being set at 2,133 feet to make a test. Walber and associates' No. 2 Cordell, Section 6-19-13, was dry with a show of oil at 2,529-33 feet and is going ahead at 2,743 feet in sandy lime; 12½-inch casing was set at 96 feet at Wingfield and associates' No. 1 McGough, Section 22-17-13.

Ashley County

The drill stem stuck at 3,650 feet at Pine Prairie Oil Co.'s No. 1 fee, Section 7-17-15.

Bradley County

Easley and associates' No. 1 Brown, 21-16-12, which has been shut down for months, was abandoned at 50 feet. Magnolia's No. 1 Arkansas Timber Co., Section 33-15-11, is drilling at 1,840 feet. McMurry and associates' No. 1 Southern Lumber, Section 7-15-11, is drilling in shale at 2,550 feet. Wingfield and associates' No. 1 Southern Lumber Co., Section 2-16-12, is drilling at 914 feet.

Calhoun County

Harris and Buckley's No. 1 Freeman Lumber Co., Section 26-16-13, which was shut down at 1,150 feet months ago, has been abandoned at that depth. Delmar Oil Co.'s No. 1 Guidor, Section 16-11-14, is drilling at 758 feet.

Cleveland County

Kingland Oil Co.'s No. 1 R. Hall Section 31-10-10, is shut down waiting for 8-inch casing to cut off a water flow at 1,070 feet.

Drew County

McClintock and Goodka's No. 1 Olga, Section 35-13-5, is coring at 2,510 feet.

Hempstead County

Frank S. Myers' No. 2 Nichols, Section 17-11-25w, is drilling in hard rock at 2,240 feet.

Dallas County

McNeil and associates' No. 1 Owens, Section 29-10-16, which was temporarily abandoned several months ago was abandoned at 2,210 feet.

Jefferson County

Decem Oil Co.'s No. 1 Hinsley, Section 7-3-10, is shut down at 2,530 feet waiting for a rock bit.

Lafayette County

Arkansas Fuel Oil Co. put No. 4 Allen, Section 18-19-24, on the pump and the test was completed for a 40-bbl. producer at 2,802 feet. Texas Co.'s No. 1 Colvin, Section 14-17-24, is drilling at 2,775 feet.

Little River County

Greason and associates' No. 1 Waldrop, Section 4-13-31, is drilling in rock at 1,380 feet.

Miller County

Gulf Refining Co.'s No. 1 Dorsey, Section 27-17-16, is drilling in soft gray sand at 1,938 feet.

Louisiana Wildcats—Bienville Parish

Woodley and Collins' No. 1 Thomas, Section 23-16-10, is being reamed to the bottom at 1,138 feet.

Bossier Parish

Woodley and Collins' No. 1 Antria, Section 4-21-11, is drilling at 2,045 feet.

Caldwell Parish

A derrick is up for Kinsey and Jones' No. 1 Shaw, SE cor. SW NW, Section 22-14-4e. Keisker and Simon's No. 1 Merideth, Section 38-13-4e, is drilling at 150 feet. Southern Crude Oil Purchasing Co.'s No. 2 Caldwell, Section 1-13-5e, is coring at 150 feet.

Claiborne Parish

Gilfland Oil Co. and Ramsey's No. D-1 Taylor, Section 14-23-8, is shut down at 4,529 feet waiting on 4½-inch casing which is to be set at that depth. Gulf Refining Co.'s No. 1 Crichton, Section 35-19-8, is drilling in chalk rock at 2,245 feet. George T. Shaw and O. C. Ruch's No. 1 King, 1,120 feet north and 980 feet east center Section 20-21-8, is spudding. Triangle Drilling Co.'s No. 1 Keen, Section 7-19-5, which tested salt water with a show of oil at 4,513 feet is to be deepened.

DeSoto Parish

Dixie Oil Co.'s No. 1 Jenkins, Section 9-12-11, is drilling in lime at 4,357 feet. Magnolia Petroleum Co.'s No. 1 Bond, Section 27-12-11, is drilling in sand rock at 3,766 feet. Peer Oil Corp.'s No. 1 Woolums, Section 23-13-13, is drilling in lime at 2,701 feet. Snapp and associates' No. 1 Flores, Section 27-11-11, is drilling in hard sand at 1,217 feet.

Grant Parish

Two more tests in Grant Parish registered in the failure column. Humble's No. A-10 L. & A., Section 13-9-2w, was dry and abandoned at 1,686 feet, and Humble's No. A-13, L. & A., Section 23-9-1w, was dry and abandoned at 1,648 feet. Fuller and associates' No. 1 Harrison, Section 9-8-5w, is drilling at 1,165 feet. Humble's No. A-1 Edenborn, Section 30-9-2w, is drilling in rock at 1,996 feet. Holmes and associates' No. 1 Holmes, Section 17-9-1e, is drilling at 200 feet. J. J. Long and associates' No. 1 Calhoun, 1,574 feet north and 490 feet west SE cor. Section 4-7-1w, is a rig. The Texas Company's No. 1 Swope, Section 16-9-1e, is being bailed to test at 1,573-81 feet.

Jackson Parish

Charles A. Ferguson's No. 1 Martin, Section 5-15-1e, is drilling in rock at 1,700 feet; El Dorado Chief Oil Co.'s No. 1 Jones, Section 3-14-4w, is drilling at 400 feet. Grigsby & Co.'s No. 1 Adams, Section 22-17-4w, is drilling at 600 feet. Louisiana Petroleum Co.'s No. 1 Davis Theus, Section 20-16-3w, is drilling in lignite at 1,580 feet. Raymond & Co.'s No. 1 Davis Lumber Co., Section 13-16-2e, was erroneously reported as drilling and is a derrick.

Lincoln Parish

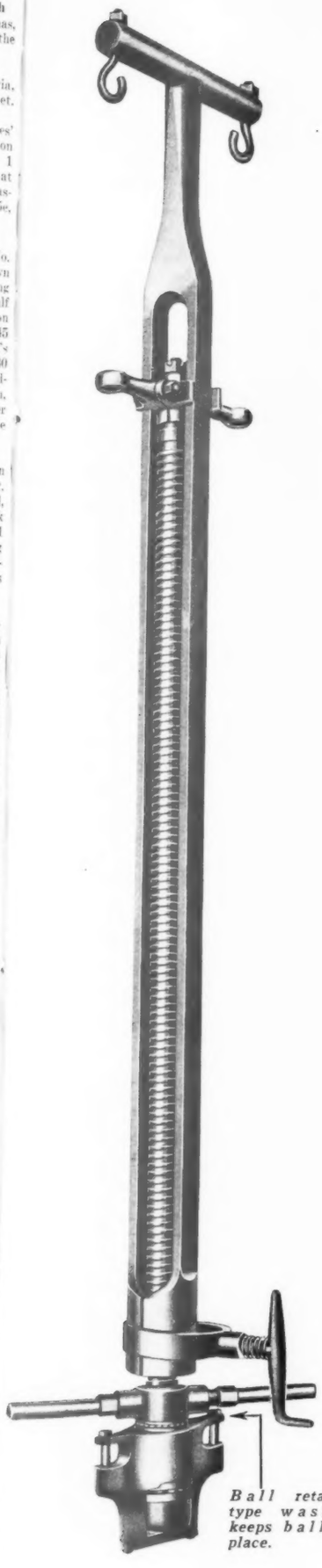
Surface casing was set at 174 feet at Arkansas Fuel Oil Co.'s No. 1 Lincoln Land Co., Section 3-18-3w. Buckley and Palmer's No. 1 Davis, Section 12-20-3w, is drilling in lime at 2,306 feet.

LaSalle Parish

Two flexture tests in LaSalle Parish were failures. Vacuum Oil Co.'s No. 1 Louisiana Central, Section 13-10-2e, was dry and abandoned at 1,839 feet. Tunica Petroleum Co.'s No. 6 L. & A., Section 22-9-2e, was dry and abandoned at 2,400 feet. N. C. Hudson's No. 1 Urania, Section 6-10-2e, is a rig. Tunica Petroleum Co.'s No. 4 L. & A., Section 15-9-3e, is drilling at 400 feet. Tunica's No. 7 L. & A., Section 1-8-1e, is drilling at 1,470 feet.

Natchitoches Parish

R. E. Davison and associates' No. 1 Williams, Section 31-8-5, was dry and abandoned at 1,728 feet. Brothers and associates' No. 1 Cockfield, Section 78-7-5w, is drilling at 500 feet. Location was made for Davison and associates' No. 1 L. L. L. L. Co., central SE NW, Section 21-7-9. Forrest's No. 2 Ayers, Section 3-13-7, is drilling in rock at 1,295 feet. J. B. Greer's No. 1 L. L. L. L. Co., Section 6-5-7w, spudded and was shut down. Location was made for Humble's



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No. 1 Muna Rogr, Section 85-7-6. McCormick and associates' No. 1 Russell, Section 41-10-7, is a derrick pattern. Ohio Oil Co.'s No. 1 L. L. L. L. Co., Section 20-8-8w, is a rig. Weaver Brothers' No. 1 fee, Section 4-7-7, is coring at 1,105 feet.

Rapides Parish

Minnesota Oil Corp.'s No. 1 Wettermark, Section 7-5-3w, is shut down at 600 feet for water. F. Pacholik's No. 1 Voda, Section 12-4-1e, is drilling at 90 feet.

Red River Parish

Alden Oil Co.'s No. 1 Powell, Section 13-11-10, is drilling at 900 feet.

Richland Parish

Gulf Refining Co.'s No. 1 Ches-Wyman, Section 23-18-8e, is drilling in shale at 1,260 feet. A derrick is up for Louisiana Petroleum Co.'s No. 1 W. E. Hicks, Section 22-17-6e.

Sabine Parish

L. M. Emlet's No. 7 Bowman, Section 14-7-14, is drilling in shale at 1,505 feet Godchaux and associates Magnolia's No. 1 L. L. L. L. Co., Section 11-6-11, is a rig.

Tensas Parish

Spencer and Rhodes' No. 1 Somerset, Section 29-14-12, is drilling in gray sand at 1,815 feet.

Winn Parish

Allen Drilling Co.'s No. 1 Sanders, Section 21-13-2w, is a derrick. Humble's No. 1-A Edenborn, SW cor. SE SE, Section 26-9-3w, is a derrick. Surface casing was set at 330 feet at Ohio's No. 2 Edenborn, Section 4-12-1w. Tatum and Pitts' No. 1 Milan, SE SW SW, Section 8-13-3w, is a derrick pattern.

CALIFORNIA FIELDS

(Continued from Page 54)

the lower zone at 4,832 feet. This well, which was finished with a 4¼-inch liner, 75 feet of which was perforated, was returned to production pumping 448 bbls. of fairly clean 22.1 gravity oil daily. The McKeon Oil Co., discoverer of the McKeon sand in the northwest extension, returned its No. 2 Cerritos to production as a 260-bbl. pumper after redrilling and deepening it to the deep sand at 4,787 feet. George W. Johnson's No. 4-A Cerritos, which was also recompleted in the deep zone after being deepened to 4,887 feet, was returned to production pumping 180 bbls. of 21.1 gravity oil cutting 10 per cent.

A. J. Delaney, who has experienced considerable success in his development work in the northwest extension and developed quite a substantial production in that area, finished his No. 30 Cerritos during the early part of the week as a gas well from 3,162 feet. It started off flowing a little better than 2,000,000 feet upon completion but settled down shortly after being brought in and has been making 1,300,000 feet consistently during the past several days. J. H. Richardson finished a small pumper in the older section of the field, his No. 5 Son, being good for 106 bbls. of 25.8 gravity oil from 4,386 feet. The General Petroleum's No. 7 K. & H., also in the old area, is looking unusually promising at 4,311 feet and the company will probably give this well a test within a short time.

Walter P. Temple's No. 5 Cerritos, a deep test in the northwest extension, which should prove conclusively the existence or absence of a third producing horizon in this area, is rotating ahead at 5,349 feet. Temple is watching this test very closely and, while there have been no showings or favorable indications below the 5,000-foot level, it cannot yet be classified as a duster.

Rosecrans

The successful completion of Fred E. Cole's No. 1 Wright in the eastern part of the Rosecrans Field a week or so ago will result in the drilling of at least two more wells in this particular area in the near future. Cole, who is being backed by L. T. McCutcheon and associates of the Formax Oil Co., has decided to begin work on a second well within the next two weeks. The General Petroleum has already started work for an offset on the Vaughn lease, the new well in question being designated as No. 4. With the exception of this particular area, there was no change in the status of any of the other wells, although the Barnsdall should list Nos. 13 and 14 on the O'Dea property for completion within the next 30 days. The Union, although it has not finished any big wells in this area for some little time, is, nevertheless, maintaining an adequate drilling program on the Rosecrans and Howard Park properties, each of which should yield new wells in the near future. The Barnsdall and Union have used common sense in developing this field with the result that these two concerns still have considerable undrilled acreage which will be reflected in future financial reports.

Inglewood

The Associated recompleted No. 17 Vickers in the Inglewood Field after redrilling and deepening it to 2,700 feet and the well has just been returned to production pumping 585 bbls. of fairly clean 21.2 gravity oil daily. The next completion in this field will probably be No. 2 Vickers of the Standard, a recent spud. Operators in this area only have a few locations left and as a result, drilling operations have been cut down to a minimum. The existence of a deep sand in this field, however, assures, the Standard, Associated, Petroleum Securities and Shell of a substantial production whenever it proves desirable to develop the lower horizon. It is to be hoped, however, in view of the present excessive State production, that this work will be held up for another year, and in this connection the Associated is to be highly complimented on its action in shutting in No. 2 Vickers, as this well is undoubtedly capable of producing from the deep zone.

Santa Fe Springs

The General Petroleum is stepping right along with its new work on the Santa Fe lease and will probably spud in No. 23 Santa Fe, which will increase the company's drillers in the Santa Fe Springs Field to four. The Standard's No. 19 South Whittier Community, has been standing rigged up for some time and, although actual spud has not yet been made, drilling should get under way soon. Abandonment notices filed during the week list No. 3 Meyer of the Union Oil Co. and, while an abandonment under ordinary conditions receives but a casual mention, this well is of particular importance because of the history back of it. No. 1 Bell, of the Union, is generally credited with opening up the Santa Fe Springs Field, but in reality No. 3 Meyer was the first well in this area to secure commercial production. The exact completion date is not available but it was finished back in 1913, some eight years before the advent of No. 1 Bell, which drew the attention of operators to the potentiality of this high gravity field during the latter part of 1921. No. 3 Meyer was only a small well upon completion, the first two holes having been lost, but it has, nevertheless, been a consistent producer during most of the intervening period. Production had declined to such an extent during the past year or so, however, that it has ceased to be a commercial producer.

The York-Smullen Drilling Co. succeeded in returning No. 1 Blakeboro Simmons to production in the Rideout Heights section of the Whittier Field after redrilling and deepening it from 2,387 feet to 2,503 feet. The additional hole added resulted in the production increasing from 40 bbls. a day to 125 bbls., the output testing 19.2 degrees and showing a cut of 10 per cent. The McCaslin Oil Co.'s No. 1 Patton-Gregg was also recompleted during the early part of the week and it is pumping 50 bbls. of 18.8 gravity oil daily. This hole was originally drilled to 1,345 feet but was later plugged back to 832 feet, from which depth it is producing at present. The South Slope Oil Co. is abandoning its No. 3 Childs in this area as a duster at 3,990 feet following the failure to pick up anything that resembled production

Fullerton

The Union Oil Co. finished an excellent completion on its Stearns lease at Fullerton, when No. 56 was turned loose from 3,585 feet. This new well, which is in the northern part of the property and a first line offset to the General Petroleum's Tonner lease, showed an initial daily run of 1,522 bbls., the oil testing 26.6 degrees and showing a cut of 1 per cent. The Union has three other drillers on this lease, which comprises approximately 1,000 acres in the heart of the field, two of which, Nos. 64 and 67, should be on production within a comparatively short time. The Chanslor-Canfield Midway Oil Co. is still drilling ahead in No. 96 Olinda, the world's deepest well, and, unless mechanical trouble develops, should reach the 8,000-foot level within the next two weeks, at which point drilling is scheduled for suspension.

The California Petroleum chalked up a 1,188-bbl. producer at Richfield with the completion of No. 19 Yarnell, a new well drilled to 4,615 feet and finished with a 6¼-inch oil string carrying 510 feet of 120-mesh screen. The oil is of a good grade testing 23.6 degrees with the cut averaging around 2 per cent. The Union is doing considerable development work at Richfield, where it is running something like six strings of tools on the Coyle, Dorsey, Newell and Yorba Linda leases. The Union, by the way, has decided that 6,157 feet is a conclusive test as far as No. 57 Graham & Loftus is concerned, and this deep hole, in the Coyote Field, will be plugged back by stages for a test of several upper showings.

Seal Beach

The Marland's No. 2 Bixby, which was responsible for the opening up of the new field at Seal Beach, is flowing with clock-like regularity, the daily average output for the past week being 1,245 bbls. The splendid showing made by the discovery well has inspired confidence in the field to the extent that both the Marland and Standard will spud in new holes within the next few weeks. The former has tentatively located four tests on the Selover & McGrath property, while the latter has mapped locations for Nos. 1 and 2 on its Alamitos Land & Water Co. lease, both of which should be near the apex of the structure. The Marland will be obliged to offset these two Standard wells and will undoubtedly do so by spotting two locations on the Bixby lease and two on the Selover & McGrath property, unless some tentative agreement is reached between the two companies in the meantime. The Standard's first two wells in this area are located 225 feet from the Marland's property line. The latter has holdings on both sides of the Standard and may find it obligatory to drill two wells to every one started by this company. This might lead to some unnecessary drilling unless a gentleman's agreement is entered into to keep work down to a minimum for some time.

In order to prevent any agitation and to remove any apprehension that the park lagoon or bathing beach might be polluted, the Marland will start construction immediately on a high embankment around its Selover & McGrath lease at Seal Beach, which will probably involve an expenditure of something like $10,000. The Marland is obligated to initiate drilling on this lease within 60 days following the discovery of oil in commercial quantities and for this reason it is believed that at least two holes will be started on this property within the next two or three weeks. It is rather interesting to note that both the Marland's Selover & McGrath property and the Standard's Alamitos lease are within the city limits of Long Beach, although the Bixby property, upon which the discovery well is located, is situated outside the corporate limits and over the Orange County line.

The Union has reached a depth of 5,048 feet in its No. 1 Bryant in the northeastern part of the field but, judging by its depth, this well is off structure. The Associated has located its fifth diamond core survey hole on the Hellman property about one-half a mile east of the Marland's discovery well, No. 2 Bixby, and will probably start drilling within the next week or 10 days. The fourth structure hole was abandoned last week at 1,950 feet. Considerable leasing is still being done in the Alamitos Heights district, in the northwestern part of the Seal Beach Field, and, although this area is still restricted as far as drilling is concerned, operators are inclined to believe that some concession may be made at a later date.

Montebello

The McGinley Oil Co. finished a fairly good producer in the Montebello Field, when its No. 22 was put on the beam at 3,500 feet, and although the well is producing through 425 feet of open hole, the output is fairly clean, cutting less than 1 per cent. The company reports the initial production as 392 bbls., the oil testing 27.2 degrees. The Standard is running two strings of tools in this area, but will probably increase this work by spudding in No. 4 Howard & Smith and an additional hole on the Baldwin property. The St. Helens Petroleum has just started work on a new driller, No. 13 Monterey, and is now running three strings of tools, the other two drillers being No. 1 McDonald at 3,650 feet and No. 3 Mulholland at 3,625 feet, all three being located in proven territory. The Shell is concentrating its efforts at Fullerton with one driller on the Columbia lease, another on the Pico and three on the Orange property, with rigs going up for No. 5 Fisher and No. 2 Puente. The General Petroleum has one drilling project on its Thompson lease at Richfield and two on the Tonner, with stakes in for No. 4 Hugo and Nos. 7 and 8 on the Stearn lease.

Ventura Avenue Field

The principal development of interest in the Ventura Avenue Field during the past week was the amount of new work undertaken particularly by the Associated, which company has rigs going up for Nos. 28, 37, 39, 41 and 46 on the Lloyd lease and Nos. 4 and 6 on the Hartman property. The erection of these new rigs apparently indicates the intention of this company to continue its policy of continuous development at least for the next six months. The Associated has started reconstructing the derrick of No. 5 Lloyd destroyed 10 days ago by fire and everything should be in readiness to resume drilling within the next two weeks. No. 17 Lloyd, now at 5,201 feet, should come into production within the next 15 days followed by No. 32, at present down 4,850 feet, and No. 45, standing cemented at 4,047 feet.

The Shell will probably finish four new wells, No. 8 Edison, No. 11 Gosnell and Nos. 12 and 13 on the Taylor lease, in this field within the next 30 days, as all of them are approaching completion depths. Nos. 7 and 9, on the Edison property, Nos. 12 and 13 on the Gosnell and No. 14 Taylor should follow this quartet into production a short time later. It is quite evident that the Shell also intends to pursue a continuous drilling program as rigs are already under way for Nos. 11 and 15 on the Taylor lease. This new work should tend toward a higher production during the next six months and the field is expected to register a substantial increase during this period.

The General Petroleum is running four strings of tools on the Barnard lease and has rigs standing for Nos. 5-A, 8 and 9, which will probably be spudded in some time during the course of the next few weeks. No. 9 Notten, the only driller on this property, is nearing completion at 5,926 feet and should be tanking oil within a short time. No. 1 Willett and No. 1 Orton of the Petroleum Securities should enter the interesting stage within a short time and from now on the former, which has just passed the 5,065-foot level, will be watched with extreme care. The Bolsa Chica resumed drilling in its No. 2 Hart-

(Continued on Page 143)

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TEN-YEAR oil leases. No rentals. Crockett County, Texas. Send for true map. Paul Konz, Box 291, Fort Worth, Tex.

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OIL DEVELOPMENT county maps; any county in Oklahoma or Panhandle of Texas, 50 cents each. Lindsay Map Co. Scott Thompson Bldg., Oklahoma City, Okla.

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WANTED—WET GAS
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WANTED—Parties to co-operate with me in developing proven oil leases. I own machine and can start drilling immediately. Wonderful opportunity for big profit. J. T. Stanford, Oil Springs, Ky.

DRILLING CONTRACTOR wanted with own standard cable outfit suitable for deep test well. Should be willing to take part of gamble with group of high-class men, in acreage on structure approved by all geologists acquainted with region. Local geological work by man who has opened many large pools in the West. Communicate with P. O. Box 323, Tallahassee, Fla., described outfit and state experience.

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Suite 1, Green Bldg. Amarillo, Texas

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RIVER FARM—117, improved; close to fishing stream; fruit; spring water; school on place; team, wagon and cow; $1,170. W. Arthur, Mountain View, Mo.

TEXAS PANHANDLE RANCH, 25,000 acres, near oil fields, for sale cheaper than lease. John P. Marrs, City National Bldg., Wichita Falls, Tex.

$3.50 PER ACRE, 10,000-ACRE RANCH WILL MAKE SPLENDID GAME PRESERVE
Good hunting and fishing. On Eleven Points River; 300 acres cultivated. Four sets buildings; heavy fence. Fine range. One-day shipment to St. Louis.
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FOR SALE—230-acre bottom farm, well improved; price $20,000. B. F. Sweeney, Route 4, Neosho, Mo.

MOTION PHOTOGRAPHY

SHOW your wells and machinery in motion pictures, others are doing it. The equivalent of each 1,000-foot standard film now costs you only $24 finished. Charley High, P. O. Box 1071. Studio 2819 E. Third, Phone 3-9598, Tulsa, Okla.

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FOR SALE—White collie puppies from prize winning mother Shomont sire. C. H. McCune, Benton, Kans.

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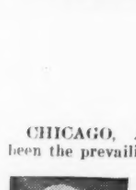
Ideal Lake, well stocked with fish near Ft. Scott Short Line, also Strang Interurban Line. Near Kansas City. Address Ryan, Overland Park, Kans.

Gasolines Slump in Chicago Market

Prices Decline Despite Large Retail Sales. All Burning and Fuel Oils Strong With Prices Higher

By J. B. Waldo

CHICAGO, Aug. 21.—Strength has been the prevailing condition in this market with the exception of gasoline. The spot gasoline demand has continued to be spotty while the movement on contracts is generally said to be satisfactory. The management of the local office of one of the largest refining and distributing organizations but without any local distribution of its own said that if it was not for their contracts they might as well close up this office as the spot business was "rotten." It has been limited at best although some of the offices have done much better than others and not always those that have booked the most business have named the lowest prices. In fact the price cutting has not stimulated but restricted the spot business. Jobbers who have been quoted lower prices than the prevailing markets have not rushed in to purchase but have rather waited and buying what they needed for immediate consumption have held back the larger business that they would have otherwise placed.



At the close of the week, many refiners who had been holding for the 11½-cent price reduced their quotation to 11¼ cents and one large refining organization made its new price 11 cents. At the same time a number of smaller refiners were offering what purported to be a U. S. Motor gasoline at 10¾ cents both for resale and in some cases to the jobbing trade direct. The offerings came for the most part from small refiners. In one case the refinery has a rated capacity of 800 bbls. daily throughput. In another the plant is a 300-bbl. plant. These were Oklahoma refiners. One of the Louisiana refining companies sold a couple of hundred cars to marketers at a price of 11 cents and these were pushed on the market at from 11¼ to 11⅜ cents. They may have sold further lots elsewhere but this 200 cars has been magnified many times.

The quantities offered appear insignificant compared with the consumption but the spot demand today consists of the limited requirements of small jobbers who have very little storage or the needs of larger jobbers beyond their contract deliveries. Apparently the latter class of jobbers are not buying actively at present but are waiting their opportunity while many of the smaller concerns pay the full market price of 11¼ to 11½ cents as the case may be as they are tied up in some way to one of those refiners that can see no good reason for reducing their prices in the offering of a limited quantity of gasoline much of it, they claim, not up to Navy specifications.

Kerosene Firm

The kerosene market has continued very firm. Prices are held at 8¾ to 9 cents with the tendency upward from the lower price. Most of the offerings are at 9 cents and this price is easily secured by refiners of known product and by any refinery who can give fairly prompt delivery. Several are some ten days to two weeks behind in their shipments and they are selling their regular trade only. The outlook is considered good for a maintenance of present prices for quite a period as the fall demand is near at hand. Refiners have increased their runs to some extent but as yet it is proven impossible to secure any quantity for prompt delivery. The Standard was in the market for 100 cars for immediate shipment and found it a slow matter to pick them up and had not completed this second purchase at the close of the week. Other refiners were also buyers. There was a strong rumor of a tankwagon advance in this territory following the increase by the Standard of New Jersey but the announcement was not made as expected although it will come later many believe.

Distillates Active

The inquiries for distillate and furnace oils are still active and while some of the distributors have secured some relief in the shape of either material bought or contracts for a part of their needs, there is still a lively inquiry for contracts over the season. In most cases the inquirer is informed that they cannot be quoted at present. Some figures obtained as to the actual number of domestic oil burners installed at the beginning of the season and the schedules of expected installations by leading makers of domestic oil burners, indicate an increase in the number of oil burners in use this winter as compared with last of about 30 per cent. The consumption per burner will vary with the kind of weather.

Refiners continue to state that they do not see where the quantity of furnace oil required is to come from. Some of the most active in pushing their early sales now state that they have taken contracts with their regular customers for all that they expect to be able to run. Others have sold up their better product and have nothing to offer but a dark distillate. Inquiry of the distributors shows that while the jobber may be convinced in his own mind that a dark oil is just as good as a straw color he knows that the latter will sell a good deal easier so the demand is for the light oils. For a good straw color 38-40 distillate the present spot market is firm at 5½ cents with an amber distillate quoted one-quarter of a cent less.

Gas Oil Strong

Gas oil is firm and in fairly active demand. There would be more sold if there was more of the light oil available but this is scarce and while 4¼ cents represents a fair price for a dark gas oil the light color uncracked oils will bring 4½ to 4¾ cents. For furnace oils the requirements are a straw color, a flash of 175 to 180 degrees and a zero cold test and a large quantity of this product could be sold at once if available. The distributors want this oil as they feel that it is the kind that they can sell with least risk of complaint. The demand for the dark cracked gas oil is steady. Some of the gas companies are doing considerable buying and some of the industrial plants are filling their storage right now while others are still waiting for lower prices later on and buying for immediate needs only. On this grade the market is firm at 4¼ average with a little selling at less, a few cars from the tracks have been moved during the week at 4⅛ cents but they are stated to be cleaned up now.

Oppose High Fuel

Fuel oil continues to bring gray hairs into the heads of both buyers and sellers here. The buyers are becoming more uneasy at the situation and some of them are worried at the thought of how much greater their expense for oil is going to be this coming winter than it was last year. There is a great deal of talk about turning to coal or gas and the gas companies are pushing hard for business and getting some. In fact, artificial gas is becoming a real rival for oil for heating in this vicinity not on the basis of cost for oil is as much cheaper than gas as soft coal is than oil but on the added advantages of getting more for the money in comfort, health and convenience. But the number of concerns that have changed or will change within a short time from oil to any other fuel is small and the users of fuel oil are gradually falling in line and either signing or preparing to sign contracts.

Some of the larger industrial users who have not signed contracts for several years have or will do so this season and others who are very hard to sell have signed with little trouble. The real trouble is to make a fair contract and what would be a fair contract is a matter of a great deal of difference of opinion. A contract based on crude prices seems equitable to the buyer because he argues that crude cannot advance and probably will decline and with it his costs for fuel oil will decrease. The refiner, who has the same view of the crude market in many cases wants a flat rate based either on the present market or a somewhat higher figure which will not be reduced if the reduction in crude prices is made. There are some of the large users such as the car builders who are securing very little new business and they are only buying as they actually need the oil but the majority of the industries see a good fall and winter season ahead of them. The time is close when the use of fuel oil for heating will become a factor in the market. Most of this business goes to the local distributor as it is used for heating the larger class of buildings, such as industrial plants, hotels, department stores, public buildings and the like. On the other hand, one of the railroads which has been a large consumer of fuel oil is said to be changing back its locomotives in one division to coal because although it runs through an oil country, it cannot secure an adequate supply of fuel oil from the refineries along its Kansas division.

The local market is very strong and prices higher. The higher gravities are scarce and the prices asked when obtainable are high. For the 28-30 the quotation is $1.55 and for the 26-30, $1.50. Even the 24-26 is hard to buy and the market is $1.40 to $1.45, according to many sellers. The lower gravities such as the 16-18 and 18-22 are more freely offered but these are cracked oils and many users are still unwilling to use them unless they have to but they are gradually being forced to learn how to handle these oils, which are held at $1.30 and upward. The prices for refinery oils run from 25 to 40 cents higher than a year ago. The Smackover products is keeping right in line with the refined fuel oils and sales have been made at as high as $1.30 a barrel, although this is the top right now with quantity orders entered at $1.25 if for prompt delivery.

No Change in Lubs

There seems to be absolutely nothing new in lubricating oils. The demand for motor oils is active and refiners are as a rule well sold up on the bright stocks and neutrals. The industrial demand is also very fair for the season although it reflects locally at least the vacation period when few plants are operating at full capacity. The export outlook is said not to be so good and there is very little likelihood of an improvement, most exporters believe, until the financial conditions abroad are improved. Prices are steady to firm for lubricating oils and greases although there is some offering of what are apparently inferior qualities than the better grades of motor oils at lower prices. Competition is very keen for the motorist trade and some very questionable devices are used to secure the business and make a good profit. One of the most common complaints is of the substitution of poor oils at stations where the sign of some well-known and reliable make was prominently displayed. Of course, the motorist who drives into a station or garage and orders a supply of lubricating oil or grease expects to secure the make advertised but in many places the charge is made that unless the buyer says that he wants that kind of oil he will be filled up with a different, less expensive and less serviceable oil. There are a great many sellers of gasoline and lubs who sell so little gasoline that they must make their profit on the lubricating sales.

EXPORT AND DOMESTIC KEROSENE PRICES IN EASTERN OIL MARKETS

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church Street, New York

NEW YORK, Aug. 21.—Kerosene was the strong feature of the eastern refined oil markets during the past week. Advances of 1 cent a gallon each in the tankwagon price were put into effect by the principal marketing companies. Standard of New Jersey raised the price to 17 cents throughout its territory August 19 and Standard of New York took corresponding action August 20.

Refinery kerosene was advanced to 11 cents a gallon, and Mid-Continent kerosene in tankcars brought 10½ cents. Tankwagon prices are now 3 cents above those prevailing January 1.

Strength in kerosene is interesting because of its causes and its possible effect on the market for other products. It is expected that it will be reflected ultimately in the gasoline market.

The chief demand for American kerosene comes from (1) the export trade; (2) domestic lighting and heating; (3) as fuel for tractors and other automotive vehicles using the cheapest gasoline; and (4) as "cracking stock" by domestic refiners.

It is said that all of these sources of demand have contributed to the strength in the market for kerosene during the past year or so. The Far Eastern export trade slumped badly after the war, and is just getting back to normal; the new use of oil burners, in home furnaces, takes more kerosene than ever; tractors contribute most strongly in the summer to the demand for kerosene, and, lastly, "cracking" is more prevalent than ever, especially since many refiners would rather increase their gasoline yield through cracking than to buy additional crude at current prices.

To most refiners, the situation is puzzling, except to those who make kerosene a special study. Gasoline, of course, is the product most of them would like to see advance, yet it no more than holds its own; gasoline is their principal stock in trade.

One theory advanced is that kerosene will ultimately disappear as a petroleum product except in a minor way as an export commodity. It is being merged into gasoline, on the one hand, and into furnace oil on the other, through new refining methods, and due, of course, to the increased demand for the two other products. Its use in tractors, and for cracking, places kerosene almost on a par

(Continued on Page 143)

KEROSENE PRICES IN EASTERN OIL MARKETS

(Continued from Page 142)

with gasoline in utility, and this is advanced as one cause of its price approaching that of the latter product.

Gasoline Unchanged

The gasoline market has exhibited little change, but it is steady. Demand has held up well, and stocks are tending downward under the strain of the heavy consumption.

An authority on refining states the opinion that gasoline will advance in price (other things being equal) when the supply of kerosene for cracking results in an advance in price of that product to that of gasoline. One reason for gasoline not advancing, he says, is that refiners have been able to increase production from the heavy "cracking" stock without additional investment of importance. So soon, however, as it is necessary to draw on additional crude supplies to meet the demand for gasoline, prices of both gasoline and crude will advance. This may occur, he says, late in the fall, but is not in prospect for the immediate future. In other words, the situation is that the demand for gasoline has made itself felt on kerosene, rather than on the crude market.

Meanwhile, furnace oil has been advanced ½ cent to 11½ cents a gallon in tankwagon lots of around 1,000 gallons. Smaller lots (500 gallons or less) cost 12 cents a gallon.

Gas and Fuel Oil

Gas and fuel oil are unchanged in price and the demand is holding only with a fair degree of steadiness. Gas oil is scarce, however, with some factors asking 7 cents a gallon for large lots.

Lubricating Oil

The market for lubricating oils is steady. Motor oils and spindle oils are especially strong at present. Bright stock was advanced to 42 cents a gallon at local refineries during the week, up 1 cent. All spindle oils were strong, 230 viscosity, 5½ color, being raised a half cent to 17½.

Red and pale paraffin oils were dull, and unchanged in price.

Paraffin Wax

The market for paraffin wax is unchanged. More business is reported at current prices, however.

Petrolatum

Principal grades of petroleum have come into somewhat better demand during the last few days. Prices, however, still remain at the year's lowest levels.

Export Market

The export market was steady during the past week. The main feature was an advance in kerosene to new high records for the year. Standard Oil of New Jersey and other exporters raised the price ¼ cent. Standard white in cases is now 19.65 cents a gallon; water white is 21.15 cents.

Shipments reported during the past week included an aggregate of 3,985,985 gallons of gasoline, and 4,447,552 gallons of kerosene.

Paraffin wax moved rapidly. Shipments of refined wax totaled 1,059,520 pounds, and of crude, 1,296,475 pounds.

The following table shows principal exports of petroleum and petroleum products from New York reported during the past three weeks (figures in gallons unless otherwise noted in parentheses):

	Week Ended—		
Gasoline:	Aug. 18	Aug. 11	Aug. 4
Bulk	1,696,655	.....	2,310,730
Barrels	241,500	100,000	.....
Cases	2,047,830	1,134,870	1,857,750
Kerosene:			
Bulk	2,897,502	.....	2,099,574
Cases	1,550,050	3,337,540	2,878,980
Fuel oil:			
Bulk	.....	.....	2,447,900
Gas oil:			
Bulk	134,574	.....	.....
Lubricating oil:			
Bulk	1,448,475	.....	2,112,273
Barrels	834,400	1,477,500	875,900
Cases	225,810	209,710	258,550
Lubricating grease:			
Barrels (lbs.)	376,650	1,163,250	245,000
Paraffin wax:			
Bags (lbs.)	1,059,520	2,075,260	630,740
Barrels (lbs.)	1,296,475	520,125	878,750
Petrolatum asphalt:			
Barrels (lbs.)	1,641,600	766,175	.....
Crude oil:			
Bulk	767,890	.....	.....

The foregoing figures included individual shipments of 500 bbls., 1,000 cases, or over.

Oil Receipts

Estimated receipts of crude and refined oil at Atlantic Coast ports for the week ended August 18 were 3,762,000 bbls., a daily average of 537,000 bbls. The week ended August 11 receipts were 3,633,000 bbls., a daily average of 519,000 bbls.

Receipts from the Gulf Coast aggregated 2,870,000 bbls., or 410,000 bbls. daily, compared with 1,943,000 bbls., or 278,000 bbls. daily, the preceding week.

Imports fell off rather sharply. The figures below now include imports from Mexico and South America (including Trinidad), separately, as the growth in the latter is considered of special interest to readers. Of the total daily average imports, Mexico provided 33,000 bbls. and South America 28,000 bbls.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports from the Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 12 months (figures in barrels):

	Week Ended—		
	Aug. 18	Aug. 11	Aug. 4
Gulf	410,000	278,000	399,000
Pacific	67,000	96,000	93,000
Mexico	33,000	79,000	134,000
S. America	28,000	66,000	57,000
Total	538,000	519,000	683,000

Daily Average by Months					
1926:	Gulf	Pacific	Mexico	S. Am.	Total
July	360,000	66,000	113,000	38,000	577,000
June	396,000	104,000	117,000	18,000	635,000
May	318,000	66,000	114,000	25,000	523,000
April	326,000	92,000	126,000	20,000	564,000
Mar.	317,000	97,000	152,000	26,000	592,000
Feb.	332,000	73,000	104,000	18,000	527,000
Jan.	279,000	59,000	65,000	31,000	434,000
1925:					
Dec.	298,000	56,000	90,000	13,000	457,000
Nov.	259,000	36,000	80,000	12,000	387,000
Oct.	249,000	36,000	80,000	22,000	387,000
Sept.	306,000	66,000	66,000	10,000	448,000
Aug.	291,000	54,000	78,000	12,000	435,000

The foregoing estimates are based on the carrying capacity of incoming oil-laden tankers.

OKLAHOMA FIELDS

(Continued from Page 45)

SW cor. SW SW, Section 34-10-6e; Carter Oil Co.'s No. 1 Noko, NW cor. NW NW, Section 31-10-7e. The Texas Company has a rig on the ground for No. 1 Johnson, NW cor. NE SE, Section 10-9-5e.

In Section 4-9-6e, Wilcox Oil & Gas Co. has a rig on the ground for No. 1 Cluck, NE cor. NW NE. Carter Oil Co.'s No. 1 Flora Carter, NW cor. NE SE, Section 23-9-6e, is cementing 12-inch casing at 62 feet. Tidal-Osage Oil Co. has a rig on the ground for No. 2 Hull, SW cor. SW SE, Section 23-9-6e. In Section 24-9-6e, the following companies have started operations: Carter Oil Co.'s No. 1 Joe Carter, NE cor. SW SW, cementing 12-inch casing at 63 feet and No. 2, SE cor. SW SW, spudding; Mid-Continent Petroleum Corp.'s No. 2 Tayeche, C NW SE SW, drilling at 1,160 feet, and No. 4, C SE cor. SE SW, drilling at 750 feet. Tidal-Osage 's No. 1 Carter, C SE NW SW, is a rig. Mid-Kansas Oil Co.'s No. 1 Johnson, C NW NW NE, Section 25-9-6e, is spudding. Pra'rie Oil & Gas Co.'s No. 1 Bloss, NE cor. NW NW, Section 25-9-6e, rig. Tidal-Osage has spudded No. 1 Jones, C NE NE NW, Section 25-9-6e, and No. 2, NE cor. NE NW, is a rig.

In Section 26-9-6e, the following companies have started operations: Gypsy Oil Co.'s No. 3 Fixico, NW cor. NW NE, is a rig. Independent Oil & Gas Co. and Garland's No. 2 Fix'co, C SE SW NE, drilling at 150 feet; No. 3 C NE SW NE, drilling at 200 feet, and No. 4, C NW SW NE, drilling at 200 feet. Independent Oil & Gas Co. and Intercocan Oil Co. are rigging up No. 1 Parks, NW cor. SW SE; No. 2, NE cor. SW SE, is a rig, and a rig is on the ground for No. 3, SW cor. SW SE. Indian Territory Illuminating Oil Co.'s No. 2 Bowlegs, C NE NW SE, is spudding, and No. 3, SW cor. NW SE, is a rig. Pure Oil Co. is rigging up for No. 2 Strothers, NE cor. SE SW; No. 5 Strothers, NW cor. NE SW, is a rig, and has a rig on the ground for No. 6, SE cor. SE SW, and No. 7, SW cor. SW SW. Tidal-Osage's No. 1 Rockwell, C SE SE NW, is drilling at 100 feet, and No. 2, C NE SE NW, at 100 feet; building rig for No. 3, NW cor. SE NW, and has a rig on the ground for No. 6, NE cor. NE NW. T. B. Slick is build'ng a rig for No. 1 Fransk, NW cor. NE NE, Section 35-9-6e. Mid-Continent Petroleum Corp.'s No. 2 Gully, C SE SE SW, Section 7-9-8e, is drilling at 1,210 feet. In the same section, T. B. Slick's No. 2 Cobb, C NE SW SE, is drilling at 510 feet. He is also spudding for No. 3 Cobb, C SW SW SE, 7-9-8e. In Section 18-9-8e, Wynona Oil Co.'s No. 2 Harjo, S NE NW NE, is spudd'ng.

SIX COMPLETIONS IN NIGGER CREEK FIELD

By Staff Correspondent

MEXIA, Tex., Aug. 23.—There were six wells completed in the Nigger Creek Pool of Limestone County during the past week. The six wells brought the daily production to 14,726 bbls. from 12 wells. The daily average production for the field follows:

Transcontinental Oil Co.—	
No. 1 Rosson	295
No. 2 Rosson	1,495
No. 2-A Rosson	1,798
No. 3 Rosson	2,790
No. 1 Cogdell	1,037
No. 3 Cogdell	150
No. 1 Atkins	710
Murchison & Fain, No. 1 Rosson	600
Godley Oil Co., No. 1 Rosson	1,692
Moss & Keeling, No. 1 Rosson	3,248
Atlantic Oil Prod. Co., No. 1 Rosson	674
Transcontinental O. Co., No. 1 Cochran	273
Total	14,726

The most important well to be completed is the Transcontinental Oil Co.'s No. 1 Atkins. This well is in the north end of the field in a region which had been held lightly owing to the failure of the two wells of the Pure Oil Co. The Transcontinental's No. 1 Atkins lies between the Pure wells and the main body of production and its completion will revive interest in this end of the territory.

Finding oil in the Murchison & Fain well extends the producing limits of the field a quarter mile west in the south end of the field. The farthest south operation in the field is the Transcontinental Oil Co.'s No. 1 Erskine which bailed salt water from a total depth of 2,827 feet. This well is being plugged back three feet in an effort to make a producer out of it. Should the efforts be unsuccessful, it will have an important bearing upon the future of the field and will delimit it to the south.

CALIFORNIA FIELDS

(Continued from Page 138)

man following the landing of a string of stovepipe and is rotating ahead at the present time at 1,906 feet. G. J. Magenheimer's No. 1 Hartman, north of the Bolsa Chica's property, is being held up with a fishing job resulting from a twist off at 3,737 feet, which left several stands of drill pipe in the hole.

Southern California Wildcats

There was no vital change in any of the various wildcats throughout the State, although, of course, practically all of them made additional footage during the week. Several, however, are approaching the depth at which production is anticipated and within the next two weeks some of them will enter the doubtful stage unless some favorable indication is noted in the meantime. Among those which will bear watching during the next few weeks, not because of any favorable indications noted to date but principally because of their depth, are the Union Oil Co.'s No. 1 Howland in the El Segundo area, at present down 4,574 feet, the Barnsdall's No. 1 Merlo at Puente, the Shell's No. 1 Berlywood at Moorpark and the wildcat of A. G. Schwartz at Rosedale. Developments in the Manhattan-Hermos Beach area are not conducive to any further work due to rather unfavorable conditions of all three wells in that section because of water trouble. The two principal wildcats in the San Fernando Valley, No. 1 Sesnon of the Petroleum Securities and No. 1 University of the Standard, made exceptionally good footage during the week.

Northern California Wildcats

The Union has just spudded in No. 2 Theta in Section 23-28-20, northwest of the Belridge Field and this structure survey hole may result in the starting of a deep test at this particular point within the next 30 days if any markers are found which might throw some light on the trend of the structure at this point. The Marland has temporarily suspended work in Section 27-26-20, in the area west of Lost Hills and it is quite possible that the order may become permanent due to the rather unfavorable outlook. Woodward and Sheedy are hauling in material for a test in the Formosa district in Section 29-27-26, on property formerly held by the General Petroleum. The Associated has completed its first diamond core test at Huron in Section 20-19-17, and the equipment is being moved approximately 1,500 feet south.

The Pyramid Oil Co.'s test in Monterey County is reported down 2,605 feet with the formation a sandy shale showing a little gas. The Pan American's No. 1 White, also in Monterey County, is really just getting under way at 2,150 feet and for this reason it is a little too early to look for any favorable indications. No. 1 Murphy of the Shell, near Petaluma, which is rotating ahead in a hard sandy shale at 2,200 feet, should prove an interesting test to follow from now on because of the development of shallow production a short distance away by H. N. Witt and associates, from whom the Shell has subleased. The Shell expects production between 2,500 and 3,000 feet.

PETROLEUM IMPORTS AT PRINCIPAL U. S. PORTS

Imports of crude and refined oils at the principal United States ports for the week ended August 14 totaled 1,518,000 bbls., a daily average of 216,857 bbls., compared with 1,740,000 bbls., a daily average of 248,571 bbls. for the week ended August 7, and a daily average of 229,321 bbls. for the four weeks ended August 14.

At Atlantic Coast Ports—	
Baltimore	50,000
Boston	40,000
New York	499,000
Others	197,000
Total	786,000
Daily average	112,714
At Gulf Coast Ports—	
Galveston district	148,000
New Orleans and Baton Rouge	574,000
Total	722,000
Daily average	103,143
At all United States Ports—	
Total	1,518,000
Daily average	216,857
Daily average 4 weeks ended	229,321

Receipts of California crude and refined oil at Atlantic and Gulf Coast ports for the week ended August 14, totaled 451,000 bbls., a daily average of 64,429 bbls., against 876,000 bbls., a daily average of 125,143 bbls. for the week ended August 7, a daily average of 90,000 bbls. for the four weeks ended August 14.

At Atlantic Coast Ports—	
Baltimore	150,000
Boston	75,000
Philadelphia	148,000
Others	78,000
Total	451,000
Daily average	64,429
At Gulf Coast ports	
Total Atlantic and Gulf Coast ports	451,000
Daily average	64,429
Daily average 4 weeks ended	90,000
Distribution of total California oil receipts is as follows:	
Crude	78,000
Gasoline	373,000
Total	451,000

CONCESSIONS IN RUMANIA

In reference to the oil concessions which Italy is to receive in Rumania, the Agenzia dell' Informazioni states that it is not a question of new territory but rather of the absorption by the Azienda Generale Italiana Petroli of a number of existing Rumanian oil companies which hold concessions that have not been efficiently developed. It further states that the Italian oil companies now operating in Rumania will be also absorbed by the A. G. I. P., according to Commercial Attache MacLean, at Rome.

Refinery Efficiency Aids Producers

Mid-Continent Operator Able toPay Present Prices for Crude Despite Relative Low Gasoline Quotations. Other Products Important

By C. O. Willson

Refiners in the Mid-Continent are able to pay present postings for crude oil, despite relatively low gasoline prices, due to the greater recovery of the gasoline from the crude and also because of the higher prices prevailing for products other than gasoline. The present situation has obtained over the greater part of this year in a majority of the refining areas in the United States.

Since the last general crude advance in the Mid-Continent in May, crude prices in relation of the gasoline quotations at refineries have been exceptionally high leading to conclusion by some that there must of necessity be a reduction in the posted price of the former. Despite this situation, however, there has been less complaint this summer among the independent refining fraternity of the Mid-Continent regarding crude prices than during the same period of previous years.

A study of the accompanying chart and the table on which it is based, explains why the manufacturing branch of the Mid-Continent oil industry has been able to absorb higher and higher raw material prices since 1923 and at the same time sell gasoline—its principal product—with only minor changes in the average yearly prices for the past three and one-half years.

Comparative Relationship

Regarding the comparative relationship between crude oil and gasoline at the refinery, the table shows that on August 19 with 58-60 U. S. Motor gasoline selling at 11 cents in Oklahoma, the refiners of that state are paying 5.45 cents per gallon for 36 gravity crude. This, of course, does not include any premiums over the posted price which are paid by many refiners nor does it cover transportation costs from the wells to the plants. This year based on averages for the first seven month the crude price has been a little over 5 cents a gallon and the gasoline price 10.78 cents per gallon. In other words, so far this year the crude price has average about 50 per cent of the refinery gasoline price.

***Table Showing Average Prices and Yields at Refineries in Oklahoma of Gasoline, Kerosene and Fuel and Gas Oils for 1923, 1924, 1925, First Seven Months of 1926 and on August 19, 1926. Average Daily Crude Price Also Shown.**

	†August 19, '26	†First 7 Mos., '26	1925	1924	1923
Gasoline					
Price (per gallon)	.11	.1078	.1065	.0905	.0989
Percentage yield (per bbl. of crude)	50.8	51.3	47.7	44.1	42.5
Gallon yield (per bbl. of crude)	21.33	21.54	20.03	18.52	17.85
Total value (yield x price)	$2.346	$2.322	$2.133	$1.676	$1.765
Percentage of total return (per bbl. crude)	73.4	75.1	77.5	74.7	75.3
Fuel and Gas Oils					
Price (per gallon)	.0351	.0331	.0272	.024	.0234
Percentage yield (per bbl. of crude)	35.9	34.8	38.7	40.4	42.8
Gallon yield (per bbl. of crude)	15.08	14.62	16.25	16.97	17.97
Total value (yield x price)	.529	.484	.442	.407	.42
Percentage of total return (per bbl. crude)	16.6	15.6	16.	18.1	17.9
Kerosene					
Price (per gallon)	.085	.0717	.0445	.0449	.04
Percentage yield (per bbl. of crude)	8.6	9.5	9.4	8.5	9.5
Gallon yield (per bbl. of crude)	3.61	3.99	3.95	3.57	3.99
Total value (yield x price)	.3068	.2861	.1758	.1603	.1596
Percentage of total return (per bbl. of crude)	9.6	9.2	7.7	7.1	6.8
Total return (per bbl. of crude)	$3.181	$3.092	$2.75	$2.244	$2.344
Average cost crude (36 gravity per bbl.)	2.29	2.107	1.87	1.63	1.56
Difference (refinery and pipeline and profit)	.891	.985	.88	.614	.784

*Prices based on low weekly quotations for 58-60 U. S. Motor gasoline. Fuel and gas oil prices were derived by taking average quotations on 24-26 gravity fuel oil and 32-36 gas oil on a basis of four gallons of fuel oil to one gallon of gas oil. Kerosene price based on 41-43 water white grade. All prices based on low weekly quotations as reported in The Oil and Gas Journal. Crude price used was average daily posting of Prairie Oil & Gas Co. for 36 degrees gravity.

†Yields for August, 19, 1926, based on June report of Bureau of Mines (latest available). Yields for first seven months based on Bureau of Mines for first six months. Yields for previous years based on yearly reports of the Bureau of Mines.

This situation contrasts with that of 1925 when the crude price was 42 per cent of the gasoline price. Even in the disastrous gasoline year of 1924 when gasoline prices were lower than any period since before the war, the crude price was 42 per cent of the average gasoline quotation. In 1923, the crude price was 37 per cent of the crude price.

Crude Prices Advance

The average daily price on 36 gravity crude as posted by the Prairie Oil & Gas Co. in Oklahoma, Kansas and north and central Texas was $1.56 per barrel in 1923. This has shown a steady climb so that the average price on the same grade so far this year was $2.107 per barrel and since the middle of May the price has been $2.29 a barrel or 73 cents greater. Gasoline at the same time advanced from an average of 9.89 cents per gallon in 1923 to 10.78 cents the first seven months of this year with 11 cents the prevailing price at the present time.

This shows that while crude prices for the past three months have been approximately 45 per cent higher than the average for 1923, gasoline prices at the present time are only 12 per cent higher for the same periods under comparison. Even in 1924 when the average gasoline price slumped to a low average of 9.05 cents per gallon the average crude advanced to $1.63 per barrel.

This comparative situation is even more striking, however, when only the relative situation this year and last is considered. The average price on 36-degree gravity crude last year was $1.87 per barrel. This is 23 cents a barrel less than the average the first seven months of this year although the gasoline price has only advanced from an average of 10.65 cents to 10.78 cents. Since May the average crude price has been 41 cents higher than the average for last year with a gasoline price which has averaged about 1½ cents a gallon under the same period last year.

These data clearly establish the fact that the gasoline consumer is not being called upon to absorb the increased cost of the raw material so far as refinery prices are concerned in the Mid-Continent. Although these comparisons are based on Oklahoma prices, practically the same situation has obtained in all refining areas of the Mid-Continent and many adjoining.

High Recoveries Responsible

The question naturally arises as to how the refiners have been able to maintain profitable operations with this relative price situation between crude and gasoline, its main product. As stated in the opening paragraph refiners have been able to date to offset the advancing crude market with greater recoveries of gasoline and higher prices for other products.

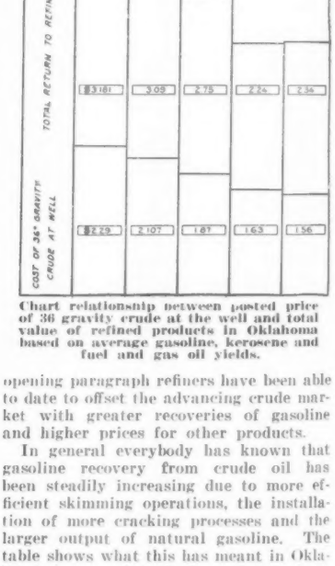


Chart relationship between posted price of 36 gravity crude at the well and total value of refined products in Oklahoma based on average gasoline, kerosene and fuel and gas oil yields.

In general everybody has known that gasoline recovery from crude oil has been steadily increasing due to more efficient skimming operations, the installation of more cracking processes and the larger output of natural gasoline. The table shows what this has meant in Oklahoma in regard to both crude and refined prices.

Gasoline recovery has increased from 42.5 per cent in 1923 to 51.3 per cent the first seven months of this year. In gallons this has meant an increase from 17.85 gallons per barrel of crude to 21.54 gallons. It will be noted in this connection that the gasoline recovery from crude was higher the first six months of this year than in June, the last report of the Bureau of Mines. This is an excellent example of the influence of prices on the recoveries of the several products obtained in refining. Gasoline recoveries ran higher early in the year than they did in June because the gasoline market was stronger and also because prices on other products were not as high. In general the trend is toward more and more gasoline from crude in refining but this

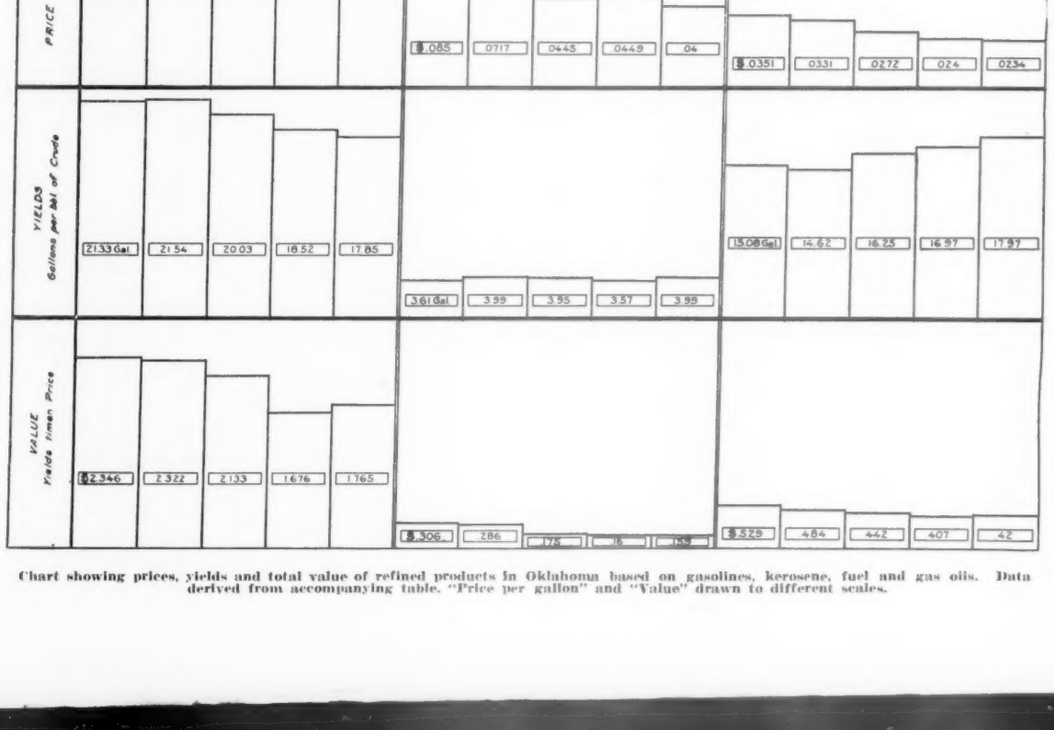


Chart showing prices, yields and total value of refined products in Oklahoma based on gasolines, kerosene, fuel and gas oils. Data derived from accompanying table. "Price per gallon" and "Value" drawn to different scales.

trend is often stopped for periods of several weeks in certain areas due to market developments.

The table shows that this increased recovery of gasoline from crude made it possible for the refiner to secure $2.322 for the gasoline in each barrel of crude while in 1923 the total return from gasoline averaged $1.765. This accounts for the fact that gasoline the first seven months this year was 75.1 per cent of the total return from gasoline, kerosene, fuel and gas oils. This compares with 75.3 per cent in 1923, 74.7 per cent in 1924 and 77.5 per cent last year. Summarized this simply shows that while the price per unit of gasoline production has not kept pace with the increase in the cost of crude this loss has been offset by the increased amount of gasoline obtained from the crude so that the percentage of total return for the past three and one-half years has shown little change. Gasoline continues to be the principal product obtained from crude in point of value due to increased plant efficiency rather than increase in prices.

The importance of more gasoline from crude is apparent when comparison is made with the gasoline value of each barrel of crude for the three and one-half years period covered in the table. The $2.322 for the gasoline content of the crude the first seven months of this year is 18.9 cents greater than the average value in 1925, 64.6 cents greater than the average for 1924 and 55.7 cents greater than in 1923. When these increases are compared with the advance in crude prices for the same period it is apparent that the refiners in Oklahoma have been able to partially offset the one with the other.

Other Products Important

It is now possible to consider the importance of products other than gasoline as they affect the total return received by the refiners from their manufacturing processes. It is obvious that it is impossible to increase the yields of gasoline without sacrificing the yield of one or more of the remaining products. In Oklahoma the principal decrease in yields has been in the products listed by the Bureau of Mines as "fuel and gas oils." Kerosene yields fluctuate depending on the market but considered over a period of a year there has been relatively little change. The past few months have furnished an excellent example of temporary fluctuation in yields. As shown in the table kerosene had a sensational advance this year. The first advance ended in May. Due to the peak prices prevailing during that month refiners in Oklahoma based on the Bureau of Mines report obtained an average yield of 10.2 per cent from crude.

However, the market slumped the latter part of May and June. As a development of these lower prices the yield decreased to 8.6 per cent in June. The market is again on the upturn and it is probable that yields will again increase.

Kerosene Price High

Kerosenes advanced from an average of 4.45 cents in 1925 to 7.17 cents the first seven months of this year with an 8.5 cent market at the present time. With yields practically the same the first seven months as last year the higher prices are entirely responsible for the fact that this year the refiner has secured 28.61 cents for the kerosene obtained from a barrel of crude or 11.03 cents more than last year.

At the present time the return from kerosene is more than 30 cents from a barrel of crude. Although still a minor product as to value the increase this year has been an important factor in determining how much the average refiner could pay for crude.

Fuel and Gas Oils

The last product to consider as to value is fuel and gas oil. The table reflects the fact that fuel and gas oil prices have been steadily climbing while the percentage yield has been declining. The lessened output is probably largely responsible for the higher prices. The increase in price, however, has in most instances not offset the decline in yields so that unlike gasoline, fuel and gas oils have hardly held their own in total return from a barrel of crude to the refiner.

The average price on fuel and gas oil so far this year was 3.31 cents a gallon compared to 2.72 cents last year, 2.4 cents in 1924 and 2.34 cents in 1923. However, in the latter year the amount received from fuel and gas oils accounted for 17.9 per cent of the total return, 18.1 per cent in 1924 but only 15.6 per cent so far this year. With these products more and more in demand for cracking operations it is to be expected that outside sales will become less and less a factor in the profitable operation of a refinery. It is still, however second in importance to gasoline and the fact that prices are higher as shown in the table the products are a factor in the value of crude oil to the refiner.

Situation Summarized

Perhaps the foregoing showing the relative importance of gasoline yields and the higher prices this year can best be summarized in the following table:

Bbl. of Crude	1st 7 Mos. 1926	Based on 1925 Yds.	Differ-ence
Value of gasoline	$2.322	$2.157	.165
		Based on 1925 Pcs.	
Value of kerosene	.286	177	.109
Val. fuel & gas oils	.484	387	.097
Total	$3.092	$2.721	.371

In brief, the table shows that the increased gasoline recovery from crude plus the higher prices on the other products has added 37.1 cents to the total received by the refiner.

Does Not Show Profits

It is not intended that the tables or charts should be taken as reflecting the relative profits of Oklahoma refiners for the three and one-half year period. The table as previously explained is based on yields determined from Bureau of Mines reports. They represent average conditions and probably do not accurately reflect the yields of any one refiner. Lubricating oils and wax are not considered because they are minor products so far as Oklahoma refining is concerned, and do not affect the situation with which this article is concerned.

Many refiners do not operate on 36 gravity crude. Some purchase lower gravities which cost them less while others operate on higher gravities and pay more. The 36 degrees grade was used because it is generally conceded to be an average grade. The same situation applies to the refined products used in the table.

Another factor which would have to be considered in determining the exact situation of the refining industry in regard to profitable operation has to do with the increasing cost of refining per barrel of crude refined. The higher gasoline yields are adding to the total return secured by the refiner but it is also adding to his costs.

In Oklahoma 25 to 40 cents would probably cover the cost of refining a barrel of charging stock with cracking facilities. The amount varies with the type of cracking process, quality of charging stock and method of operation. This obviously means a substantial increase in the cost of refining. Thus as more and more cracking units are installed the refining industry must have a wider and wider spread between the cost of the crude oil at the well and the total value of the refined products. This situation is reflected in the table and charts.

ROCKY MOUNTAIN AREA

(Continued from Page 56)

ducing carbon black. The Barnsdall-Foster interests and the Record Petroleum Co. are expected to bring in new wells in that field shortly.

The Ohio Oil Co. brought in a good producer on Section 14-34-2 in the Sunburst Field, in Montana, this location also being the southeast extension of the field. The Ohio well is estimated to 150 bbls. and the location is south of the fault line that the early operators considered would shut off any chance of oil being found to the south.

The Big West Oil Co. on Section 31-35-1 found the Ellis sand at 1,467 feet and 200 bbls. production. The Fitzpatrick interests drilled in a producer good for 20 bbls. in the Ellis sand at 1,495 feet on Section 11-34-2.

Runs From the Fields

Salt Creek	48,720
Teapot	950
Big Muddy	3,380
Grass Creek	3,130
Elk Basin	850
Greybull	20
Rock River	2,730
Notches	180
Rex Lake	260
Lance Creek	1,240
LaBarge	120
Poison Spider	1,680
Osage	350
Hamilton Dome	1,170
Lander	260
Byron	40
Pilot Butte	40
Lost Soldier	5,270
Ferris	60
Simpson Ridge	180
Cat Creek	2,760
Lake Basin	230
Sunburst	*23,500
Florence	500
Moffat	3,110
Tow Creek	1,010
Fort Collins	4,100
Boulder	25
Rangeley	100
Hogback	720
Rattlesnake	800
Artesia	3,000
Total	110,485

*Sunburst produced 25,000 bbls. from all sources including the small skimming plants, but the pipeline only ran 23,500 bbls. average daily.

CO-OPERATION AMONG INDUSTRIES NEEDED

(Continued from Page 30)

quantity production necessary for modern industry and modern life, that old economic programs become obsolete as well as old methods of operation. We are organized as a nation, on a high plane of efficiency. But the great problem is to sustain and increase that efficiency. It may be said that we have been fairly successful without scientific study. But we have not. For the steel business has been made possible by science, applied to the smelting of iron; the automobile business has been built up in the laboratories of its experts; and the oil business has improved, only as it has also recognized the need of the aid of investigation into the possibility of improved methods.

To suggest the unification of the essentially interrelated units through committees of the industries themselves is only using in a practical form the forces for co-operation already available.

If a constructive plan of co-operation can come from the industries themselves, and can be formulated in such a way as to evince no hostility from the Government, it can be worked out without popular distrust that so often attends a time of consolidation and combination. To secure Governmental co-operation the plan must be sound; and to secure popular approval it must be laid down frankly, and in the open. To plan too much may be to produce a cumbersome method that would not function; but to plan not at all may be to invite disaster.

GASOLINE SLUGGISH IN SHREVEPORT AREA

SHREVEPORT, La., Aug. 21.—A continued sluggishness in the gasoline market brought about a half-cent drop in that product's price in the Shreveport territory during the week and at that price the market was weak. U. S. Motor grade fuel ranged in price from 10¾ to 11¼ cents with some going at 10½ cents when a refiner was forced to move his gasoline.

Saturday morning the market had the appearance of strengthening to some extent. Jobbers have been fairly well stocked and only buying in small quantities. Saturday jobbers were making more inquiries and one refiner reported a heavy week-end business.

Natural gasolines went through the week strong on the wave of strength it gained two weeks ago when heavy buying strengthened it and made it a scarce product. Refiners bought heavily in naturals two weeks ago and spot sales are hard to find.

Kerosene was stronger during the week with very little available. Gas oils are still much in demand with prices strong. Fuel oil and distillate were strong.

In El Dorado, the gasoline market was the same as in Louisiana. It was sluggish with little demand and some shading of prices reported for business. Kerosene, gas oil and fuel oil were strong.

Forest Oil Corp. Will Drill 124 Wells in Knapp Creek District

BRADFORD, Pa., Aug. 21.—The Forest Oil Corp. of this city will drill 124 wells as soon as possible in the Knapp Creek district, on land secured a number of weeks ago in the corporation's mammoth deal in purchasing the J. T. Jones holdings.

Six strings of the company's tools now are at work, along with four strings belonging to contractors. It takes about 14 days to complete a well in that part of the Bradford Field. No time will be lost in drilling additional wells.

Seven houses for employes, a warehouse, pump house and a barn are under construction at a location between Knapp Creek and Rock City, known as "The Laurels." The houses will be six-room bungalow type dwellings, equipped with all modern conveniences.

Negotiations are under way to obtain electricity from the Niagara, Lockport & Ontario Power Co., for use in drilling operations and in the oil company's structures. Work on the dwellings will be completed within three months, according to B. C. Millard, Olean contractor.

PRACTICAL CONSERVATION NOW WINNING OUT

(Continued from Page 31)

significance, it would be the more receptive attitude of the industrial leaders toward new ideas and new ways of doing things. In academic circles this is called the research attitude, but in this field it is more the determined effort to lower costs. The adoption of loading machinery is cutting down the cost of coal to unexpected levels, the expansion of the power systems is likewise lowering the cost of electricity and broadening the fields of its usefulness, and the executives who control the destinies of the larger oil companies are giving more enthusiastic support to their engineering staffs—and all this means to me that practical conservation is winning out in the use of all the great stores of natural resources in the western country.

WILDCAT A WILD GASSER

SHREVEPORT, La., Aug. 23.—The Simms Oil Co. and Sun Oil Co.'s No. 1 Simmons, NW NE SE, Section 9-18-13, in the Lawson area, Union County, Arkansas, blew in at 2,618 feet, making between 30,000,000 and 35,000,000 feet of gas. The drillers were pulling out of the hole and all but 16 joints of drill pipe were out when the well blew in, blowing the tools out and tearing down the wooden derrick.

The well is shooting an 8-inch column of water 250 feet in the air. Because of the darkening of the water occasionally, some scouts hold the opinion the well is making some oil by heads. A new derrick is being sent to the location.

From what depth the water is coming from is not known. Operators do not think it bottom hole water. A salt water sand was cored at 2,563-17 feet. The test was dry in the Nacatoch sand topped at 2,196 feet and 8¼-inch casing was set at 2,187 feet, leaving 451 feet of open hole. What is believed to be an oil showing in the geyser of salt water is not thought to be coming from the Nacatoch, which was bailed dry, although it showed a little oil.

Five miles southwest Walber and associates' No. 2 Cordell, Section 6-19-13, cored a fine sand showing oil at 2,976-81 feet. Six-inch casing is being set at 2,968 feet to make a test of the show.

REFINING AND MARKETING

Novel Marketing Practices Prevail In Chicago Section

CHICAGO, Aug. 23.—An out of town oil man, who is passing his vacation partly in this city and who has been looking into the business here, calls attention to the local tankwagon situation. It seemed new to him but it was not. The condition is as he finds it that the larger companies are holding their prices at the nominal price but that nobody else is. Not only are there many stations and garages which openly post prices below the normal station price but there are all sorts of schemes being worked to secure the orders of the motorist.

Many simply offer a fill at the tankwagon price, a reduction of 2 cents to the buyer. For a while there were many stations that displayed a sign that to the casual passer read, "Gasoline Free Today." On close inspection the sign really read, "You may get gasoline free today." This was a scheme of naming the winner in the baseball game and it was claimed to be not a game of chance but of skill as the knowledge of the respective merits of the teams would be of value in picking the winners. These signs have disappeared.

Other stations give out cards and when the buyer of gasoline and oils has bought a certain quantity he is entitled to a wash or an oil free. Record is kept of the quantity purchased by punching the amounts in the margin of the card. Some of them stipulate that the charge shall be practically reduced one-half.

Sold at Cost

In some of the industrial sections gasoline is advertised to the workers many of whom drive to their work in their own car at 14 and 15 cents a gallon. Either the keepers of these stations are unsuspected philanthropists or there is something wrong with the gasoline or the manner in which the sellers acquire it. Some of these stations bear the signs of prominent makes of gasoline much to the disgust of the companies which are supposed to control the distribution of these brands. It would be a fertile ground for the organization that is seeking for truth in advertising.

Oil men who are traveling the territory report that there are places where there is some price cutting and that many jobbers fear that the continuance of the present spreads between the refining and the service station prices will result in a lot more price wars. The local spread today is 10 cents per gallon and even after the jobber has paid freight of 2.38 cents per gallon there is an exceptionally wide margin. One distributor said today that either the tankwagon must come down or refinery prices be advanced and he hoped that the refinery market would go up to 12 cents at least. This advance would not cut very deeply into his profits and would still leave room for the evils that come from excessive profits such as an unwarranted expansion of the number of service stations, rebates and secret agreements and open disregard of the price structure.

BEACON TO SELL ETHYL

The Beacon Oil Co. has contracted with the Ethyl Gasoline Corp. for the distribution of ethyl gasoline in the New England states. The contracts were made known in the semiannual report of the Beacon Oil Co., just announced, covering operations of the company for the first six months of 1926. The report showed that net earnings of the company for this period were $226,000.

GASOLINE CONSUMPTION GAINED 14.1 PER CENT FIRST SIX MONTHS

Gasoline consumption in 30 states, as indicated by reports made by wholesalers and dealers in various states, under provisions of the gasoline tax laws or gasoline inspection laws, totaled for the six months ending with June, 1926, 1,845,298,000 gallons, compared with 1,616,769,000 gallons for the corresponding period of 1925, an increase of 228,529,000 gallons, or 14.1 per cent. The report was compiled by the American Petroleum Institute. Gasoline consumption in the 30 states for the month of June, 1926, totaled 366,508,000 gallons compared with 316,317,000 gallons in June, 1925, an increase of 50,191,000 gallons or 15.9 per cent. June, 1926, daily average consumption of 12,217,000 gallons, compared with a daily average of 11,319,000 gallons in May, 1926, indicates an increase of 7.9 per cent. All available figures for the states of Iowa, Michigan, Nebraska, Ohio, Rhode Island and Wisconsin are also shown. The figures giving the quantity of gasoline sold or offered for sale as reported under various laws follow: In some cases they are gross figures before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which if paid, is subsequently refunded. All figures are subject to revision.

GASOLINE CONSUMPTION BY STATES, JUNE, 1926

	Month of			6 Mos. Ending With	
	May, 1926 Gallons	June, 1926 Gallons	June, 1925 Gallons	June, 1926 Gallons	June, 1925 Gallons
Alabama	11,102,000	10,682,000	8,915,000	58,759,000	48,199,000
Arkansas	9,463,000	8,409,000	5,520,000	47,798,000	35,928,000
Colorado	9,831,000	10,170,000	10,756,000	49,346,000	45,089,000
Connecticut	12,541,000	13,242,000	14,062,000	57,623,000	55,522,000
Delaware	2,594,000	1,776,000	1,957,000	8,969,000	8,071,000
District of Columbia	4,688,000	4,573,000	4,140,000	24,011,000	20,788,000
Florida	24,279,000	22,234,000	14,182,000	152,605,000	88,004,000
Georgia	14,962,000	13,639,000	11,528,000	79,487,000	66,428,000
Idaho	3,457,000	4,015,000	3,151,000	17,532,000	12,277,000
Indiana	23,819,000	28,616,000	25,496,000	129,379,000	119,855,000
Kansas	20,471,000	23,819,000	21,013,000	108,297,000	100,325,000
Kentucky	6,535,000	10,416,000	9,139,000	44,439,000	43,014,000
Louisiana	11,372,000	11,214,000	9,739,000	62,664,000	54,704,000
Maine	5,745,000	7,414,000	6,807,000	19,144,000	20,280,000
Maryland	10,370,000	10,757,000	9,754,000	51,446,000	43,573,000
Minnesota	26,513,000	25,943,000	23,912,000	116,922,000	103,830,000
Missouri	21,132,000	21,042,000	13,908,000	127,951,000	104,193,000
Nevada	952,000	1,072,000	932,000	4,635,000	4,040,000
New Hampshire	3,686,000	4,295,000	3,943,000	13,480,000	13,102,000
New Mexico	2,217,000	2,071,000	1,962,000	10,726,000	9,616,000
North Carolina	15,188,000	17,951,000	14,666,000	91,697,000	92,540,000
North Dakota	7,573,000	6,585,000	4,521,000	34,413,000	23,185,000
Oregon	9,716,000	11,108,000	9,610,000	50,448,000	42,896,000
South Carolina	7,442,000	7,296,000	6,854,000	42,007,000	38,340,000
South Dakota	7,643,000	6,732,000	7,334,000	35,275,000	30,019,000
Texas	43,014,000	45,011,000	40,084,000	231,985,000	217,701,000
Utah	3,741,000	3,598,000	3,519,000	16,937,000	13,998,000
Virginia	12,515,000	12,965,000	11,491,000	64,356,000	55,625,000
Washington	16,087,000	17,560,000	15,257,000	84,324,000	72,292,000
Wyoming	2,235,000	2,203,000	2,185,000	8,703,000	32,325,000
Total	350,883,000	366,508,000	316,317,000	1,845,298,000	1,616,769,000
Daily average	11,319,000	12,217,000	10,544,000	10,195,000	8,932,000
Increase over previous year:					
Amount	.....	50,191,000	.....	228,529,000	.....
Percentage	.....	15.9	.....	14.1	.....
Iowa	23,426,000	23,761,000	21,548,000	113,137,000	.....
Michigan	50,028,000	51,190,000	46,217,000	233,592,000	.....
Nebraska	13,280,000	13,832,000	14,742,000	70,305,000	.....
Ohio	63,050,000	64,415,000	56,246,000	301,418,000	.....
Rhode Island	4,915,000	4,834,000	4,522,000	22,467,000	.....
Wisconsin	25,240,000	28,704,000	25,227,000	111,224,000	.....

PUBLIC UTILITY PLANTS CONSUME MORE FUEL OIL

Electric public utility power plants consumed 620,628 bbls. of fuel oil during June, according to a monthly report of the power resource division of the United States Geological Survey, just issued. This represented a gain of 2.8 per cent over the May consumption, although a decrease of 5,700 bbls. daily for June of 1925.

Consumption of coal and natural gas by these power plants during June also showed an increase over May, gain for the former month being 2.7 per cent and for the latter 1.2 per cent. However, the use of coal and natural gas was considerably greater than during June of 1925, in contrast to the fuel oil situation.

EASTERN FIELDS GET NEW GASOLINE PLANTS

Hurley Brothers of Tulsa have just completed a natural gasoline plant for the Kanawha Oil Co. at Jacksonburg, W. Va., and are installing two others in the eastern fields, one for Sloan & Zook at Bradford, Pa., and the other for J. B. Cochran & Co., at Sheffield, Pa.

All three plants are of the Newton permanent type and each will have a daily capacity of approximately 2,000 gallons. The installations are under the direct supervision of the Hurley Brothers, representatives of the Newton Process Manufacturing Co at Tulsa.

RECOVERY PLANT WORK NEARING COMPLETION

The new equipment now being installed in the gasoline recovery system at the West Tulsa plant of the Mid-Continent Petroleum Corp. will be completed within the next two weeks. The equipment, which includes two absorbers and two blending towers, is being furnished by the Newton Process Manufacturing Co. The new recovery plant will have a capacity of approximately 35,000 gallons of gasoline daily.

NEW GASOLINE PLANT

LOS ANGELES, Calif., Aug. 23.—The Southern Counties Gas Co. has put into operation a new gasoline absorption plant at Fillmore. The plant will operate on the supposedly dry residue gas from other Ventura gasoline plants. It is on the company's line which distributes gas in Los Angeles and has a capacity of 3,000 gallons of gasoline daily.

SMALL FIRE AT REFINERY

WARREN, Pa., Aug. 23.—Only slight damage was caused by the fire at the plant of the United Refining Co. here last week. The blaze, which started when lightning struck a tank of oil, was kept from spreading to the plant. The fire was the third refinery blaze here within a month.

LOUISIANA OIL CORP. BUYS OHIO REFINING CO.

SHREVEPORT, La., Aug. 22.—Extending their marketing territory into Ohio and Kentucky, the Louisiana Oil Refining Corp. of this city, closed negotiations with the Ohio Refining Co. of Cincinnati, Ohio, last week for the purchase of that company's Cincinnati refinery and bulk and filling stations in Ohio and Kentucky. The terms of the deal were not made public. The 1,500-bbl. skimming plant, including a small cracking plant erected by the company, will be dismantled and the site used for a bulk station, according to M. G. Grogan, vice president of the Louisiana corporation. The plant is isolated from trunk lines and crude has to be shipped there in tank cars.

The Louisiana corporation acquired five bulk stations located at Cincinnati, Hamilton, Dayton, Georgetown and Wilmington, nine drive-in filling stations in Cincinnati and several filling stations scattered over the territory. The company's charter permits them to operate in Kentucky.

T. H. Payne, formerly with the Bacon Oil Co. of Batson, will be in charge of the new territory which will be operated as the Ohio division of the Louisiana Oil Refining Corp. S. E. Towery, assistant engineer and A. D. Tillman, assistant manager of agents and sales, both of Shreveport, will be transferred temporarily to Ohio headquarters, which will be in Cincinnati. A recently completed $1,000,000 improvement project at the Bossier City, La. refinery called for an expansion of the corporation's trade territory. The corporation has marketing facilities in Louisiana, Arkansas, Texas, Ohio and Kentucky.

ORGANIZES MARKETING DIVISION

CHICAGO, Aug. 17.—Swan-Finch Oil Corp. has organized a department devoted to the marketing of all petroleum products. The local headquarters are in the Ellsworth Building at 537 South Dearborn Street. A full line of petroleum products will be offered the jobbing trade. Previously the local office had handled only lubricating oils and greases. W. S. MacDowell is in charge of this department. He states that in addition to their well established eastern refining connections they have made favorable connections with Group 3 and north Texas refiners and have a full line of eastern and western oils.

NEW GASOLINE PLANTS BUILT

LOS ANGELES, Calif., Aug. 23.—The Bolsa-Chica Oil Co., General Petroleum Co., Universal Oil Co. and Shell Oil Co. are installing new portable gasoline plants in south California oil fields. The Bolsa-Chica Oil Co., Shell Oil Co. and General Petroleum Co. plants are at Ventura and the Universal Oil Co. at Lost Hills. The plants are of the Southwestern type.

HARVARD MAN PLACED ON TECHNICAL PROGRAM

In addition to the program previously announced for the annual meeting of the petroleum division of the American Chemical Society to be held at Philadelphia September 6 to 11, a paper on "Thermolability of Hydrocarbons" will be read by James B. Conant of Harvard University, according to G. A. Burrell, secretary. The remainder of the program was published on page 148 of the August 19 issue of The Oil and Gas Journal.

TOWERS

A tower 10'6" dia. x 76'6" high
built by

GRAVER

is now being erected
at a

Mid-Continent Refinery

Graver Builds

Tanks
Welded
Riveted
Plate (Riveted, Inside & Outside Welded)
Structural Supports
Tower Tanks
Standpipes
Any Size Tanks Erected Anywhere

Refinery Equipment

Jenkins Cracking Process

Stacks-Breechings

General Steel Plate Construction

Water Softeners
Hot Process
Cold Process
Zeolite
Household

Filters—*Pressure*

Purifying Systems for Swimming Pools

GRAVER Corporation Founded 1857
EAST CHICAGO, INDIANA

NEW YORK Grand Cent. Term. | CHICAGO Steger Building | TULSA Atlas Life Bldg. | HOUSTON West Building

Brief Items for Plant Operators

COMMITTEE REPORTS ON BENZOL POISONING

The subcommittee on benzol poisoning appointed by the chemical and rubber sections of the National Safety Council has made its final report relative to the hazards in the manufacture and distribution of benzol. The report is mainly concerned with the hazards other than those incident to its use as a motor fuel. However, the committee found that injury to health resulted whenever employes were exposed to the vapors of benzol and made recommendations as to the best method of handling when blending to secure a motor fuel.

Benzol poisoning exhibits itself in two distinct forms, acute and chronic — according as the exposure is brief and intense or moderate and prolonged.

Acute benzol poisoning generally occurs in one of two ways, either by the sudden discharge of vapors through failure to regulate a condensing apparatus or through a leak in the piping in the vicinity of stills or other chemical apparatus, or by the entrance of workmen into tanks or other confined spaces in which benzol has been stored or used.

Chronic benzol poisoning resulting from continuous or repeated exposure to benzol fumes in concentrations too low to produce marked narcotic effects is, of course, a condition more obscure and much more likely to be overlooked than the acute poisoning. It is particularly likely to occur in the second group of industries mentioned.

These findings indicate that the control of the benzol hazard, except in completely closed systems, is exceedingly difficult; that in practice, systems of exhaust ventilation capable of keeping the concentration of benzol in the atmosphere below 100 parts per million are extremely rare; and that even when this is accomplished, there remains a decreased but substantial hazard of benzol poisoning.

COLLECTING DATA ON POLLUTION OF STREAMS

The American Petroleum Institute is collecting data from refiners relative to oil pollution of streams by inland plants. The investigation is the result of the recommendation of the chief engineers of the United States Army, that the oil pollution Act of 1924, which applies to coastal refineries be made applicable to inland plants.

The American Petroleum Institute asks that all refiners who will be concerned in this possible extension of the 1924 Act, make careful investigation of the conditions relative to oil pollution around their plants. It is planned to consolidate all the information obtainable to be used if needed in appearing before Government committees.

It is also suggested that every company which would be affected by the adoption of the Government's plan take all possible steps to eliminate the pollution of navigable waters in the vicinity of plants to the end that it may be demonstrated to Congress that further legislation dealing with the subject is unnecessary.

TO SELL OMAHA PLANT

CHICAGO, Aug. 23.—It has been announced here that negotiations are under way to dispose of the refinery of the Omaha Refining Co., located in East Omaha, which is just across the Iowa state line from Omaha, Neb. The plant is now owned by the Omaha National Bank, holders of the bonds.

The plant has a skimming capacity of 2,500 bbls. daily with one Cross cracking unit. The plant has been shut down for over a year. It was purchased about three years by Williams interests, owners of production and pipelines in the Casper, Wyo., area. Crude was shipped by tank-car from Casper to the Omaha refinery. It is understood that the operation, due to the high crude cost, was not profitable and the plant was shut down.

TWO MORE REFINERIES ADD CRACKING UNITS

Two more refineries in the Mid-Continent Field will shortly be added to the plants with cracking processes. The Golden Rule Refining Co. at Wichita, Kans., and the Garber Refining Co. at Garber, Okla., have contracted with the Graver Corp. for the installation of Jenkins cracking units.

Each plant will install a 1,000-bbl. capacity unit of the low pressure type. The Garber refinery has a skimming capacity of 2,500 bbls. daily and the Golden Rule 1,500 bbls. daily. Neither refinery has ever operated cracking units.

NEW PROCESS TO RID SHELL REFINERY ODORS

LONG BEACH, Calif., Aug. 23.—All undesirable refinery odors will be eliminated by a new process being installed at the Watson refinery of the Shell Oil Co., according to officials of the company. Numerous complaints have been made by residents of Long Beach against odors from the 35 refineries in this vicinity. The Shell company's process will be in operation early in September, and, if successful, similar steps may be taken by the other refineries.

EFFICIENT SPRAY POND AT WEST TULSA PLANT

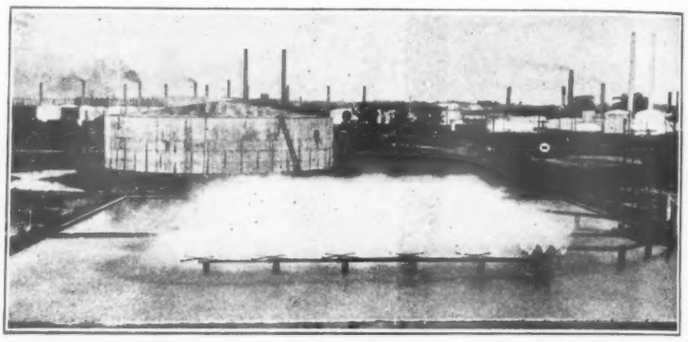
As part of a general improvement program at its West Tulsa refinery, the Producers & Refiners Corp. has completed the installation of a new spray pond. As shown in the accompanying photo it is divided into two ponds of similar size. The two ponds combined are 150 by 180 feet and 4 feet deep, handling all the water from the 5,000-bbl. refinery including six Dubbs cracking units.

In operation the water flows by gravity through a 12-inch line from the condensers to the concrete hot well beside the pump house a distance of 1,000 feet. Here it is picked up in a 10-inch line and discharged into the first pond. In the first pond it is picked up by another pump and discharged into the second pond. Two 40-horsepower motors furnish the power for these two pumps each of which have a capacity of 2,500 gallons per minute. A 100-horsepower motor is used with the pump returning the water to the plant. The pump house also contains a 12x10x12 duplex steam pump for emergency use.

The spray equipment was furnished by the Power Plant Equipment Co. There are five nozzles to each group as shown in the photo. These nozzles are non-clogging with a very fine spray. There are 12 groups to each pond.

The efficiency of the pond is shown by the fact that the hot water received at the pond at 108 degrees Fahrenheit was returned to the plant at 86 degrees Fahrenheit. Atmospheric temperature on the day the test was made was 100 degrees Fahrenheit. The water when leaving the first pond was 92 degrees Fahrenheit.

The walls of the pond are concrete with a clay bottom.



Double spray pond at West Tulsa refinery of the Producers & Refiners Corp.

AMONG THE TECHNICAL MEN

D. H. Christman, superintendent of the Crystal Oil Refining Co.'s refineries at Shreveport, La., quit the milling business 28 years ago and entered the refining business as a pumper at the Sun Oil Co.'s Toledo refinery in 1898. He became interested in refining through his brother, W. T. Christman, now superintendent of the Shreveport refinery of the Shreveport Producing & Refining Corp.

D. H. Christman

He rose rapidly in his new profession. A short time later he was identified with the old Lake Carriers Co. refinery and there gained experience as a stillman, in treating oil and when he left that refinery he was house engineer. From there he went to the Pittsburgh Oil Refining Co. as assistant superintendent.

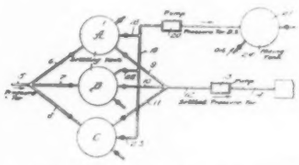
A short while later he was placed in charge of his first plant at the Imperial Oil Co.'s Marrietta, Ohio, refinery which was later sold to the National Refining Co. He was with the National 11 years and then went to the Wabash Refining Co. as superintendent of the Robinson, Ill., plant.

In 1916 he went south and was made superintendent of the old Caddo Central's Shreveport refinery. The Caddo Central was recently reorganized under the name of Crystal Oil Refining Corp. He was in charge of construction when the old refinery burned several years ago and built the Crystal's second refinery at Shreveport.

Mr. Christman was born in Archbold, Ohio, in 1876, and graduated from high school at Archbold. He started in the milling business at the close of his school days.

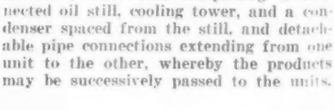
Recent Patents

1,594,038. Handling Pressure Tar. Edward E. Bartels and Edward J. Shaeffer, Whiting, Ind., assignors to Standard Oil Co., Whiting, Ind., and Chicago, Ill., a corporation of Indiana. Filed September 22, 1924. Serial No. 739,108. 4 Claims. (Cl. 196—1.)



1. The method of handling pressure tar comprising settling the pressure tar, separately removing the settled tar and the sediment, and admixing the latter with a heavy oil having a specific gravity of at least 1 at 60 degrees Fahrenheit.

1,593,107. Portable Refinery. Thomas W. Sowell, Dallas, Tex., assignor to the Portable Refinery Co., Dallas, Tex., a corporation of Delaware. Filed June 5, 1922. Serial No. 565,810. 8 Claims. (Cl. 196—104.)



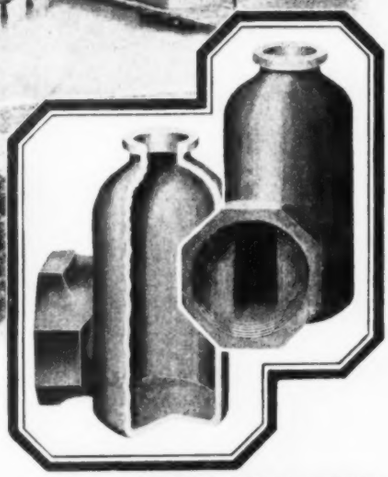
1. In a portable refinery, the combination of a plurality of independently portable units adapted to be assembled in a longitudinal series for transportation and to be disposed side by side for co-operative use, each unit comprising a connected oil still, cooling tower, and a condenser spaced from the still, and detachable pipe connections extending from one unit to the other, whereby the products may be successively passed to the units.

MARLEY

another Spray Pond Installation

PRODUCERS & REFINERS CORP'N., WEST TULSA

Included in the improvements just completed at the Producers & Refiners West Tulsa Refinery, is a complete "Marley" Spray Pond Installation. This spray pond is used to cool the hot water as it comes from the condenser boxes. The installation of this "Marley" assures this refinery a material saving in their monthly bill for water.



Equipment of Merit!

THE selection of "Marley" Spray Pond Installations and "Marley" Spray Pond Equipment by exacting buyers throughout the country is but an indication of the extremely high efficiency, economy and durability with which they operate. This is one reason why during the past several years, most of the major spray pond installations in the Southwest have been designed, guaranteed and furnished by Power Plant Equipment Company. A suggestion to you—consult us on your needs.

Power Plant Equipment Co.

2101 Grand Ave. Kansas City, Mo.

At The Sand Springs Chemical Co., Too!

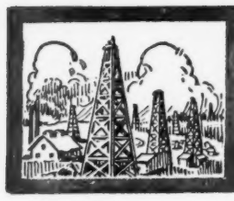
When putting into operation Dr. Martin's new process for utilizing salt water from oil wells—The Sand Springs Chemical Company selected a "Marley" Spray Pond Installation to function in the salt vat. As the entire process depends entirely upon an efficient spray system, great care was used in investigating the type to be used. The selection therefore of a "Marley" Spray Pond assured them of this high efficiency, as well as the greatest economy and dependability possible to secure in spray pond operation.

MARLEY NON-CLOG NOZZLES

The need for a more efficient spray pond nozzle, and one that will not clog, has been successfully met with the "Marley." Its large rectangular venturi-shaped inlet throat and its large bottle-shaped upper whirl chamber prevents any possibility of clogging —and gives that fine uniform spray at low operating pressure that is so desirable.

FREE Catalog

Catalogs giving complete facts regarding "Marley" Spray Pond Installations and "Marley" Spray Pond Equipment will be sent upon request. Why not get your copy now. Write today.



REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Aug. 24		Aug. 17		Aug. 10	
OKLAHOMA (Group 3)—						
50-52 450 end point	.10¼	.10½	.10½	.10¾	.10¾	.11
56-58 450 end point	.10¼	.10½	.10½	.10¾	.10¾	.11
58-60 450 end point	.10⅜	.10⅝	.10¾	.10⅞	.11	
58 60 437 end point (U. S. Motor)	.10⅜	.11	.10⅞	.11	.11¼	.11½
60-62 400 end point	.11¼	.11⅜	.11⅜	.11½	.11¾	
64-66 375 end point	.11½	.11⅝	.11⅝	.11⅞	.12	.12¼
68-70 360 end point	.12	.12⅛	.12	.12¼	.12¼	.12½
KANSAS—						
58-60 437 end point (U. S. Motor)	.11⅛	.11⅜	.11¼	.11½	.11½	.11¾
NORTH TEXAS—						
48 50 450 end point (Naphtha)	.10¼		.10½		.10¾	
50-52 450 end point (Naphtha)	.10¼	.10⅜	.10½	.10⅝	.10¾	.11
56-58 450 end point	.10¼	.10⅜	.10½	.10⅝	.10¾	.11
58-60 437 end point (U. S. Motor)	.10½	.10¾	.10¾	.10⅞	.11	.11¼
60-62 400 end point	.11⅛	.11¼	.11¼	.11½	.11½	.11¾
64-66 390 end point	.11¼	.11⅜	.11½	.11⅝	.11⅝	.11⅞
64-66 375 end point	.11⅜	.11½	.11½	.11¾	.11¾	.12
68 70 360 end point	.11⅞	.12	.11⅞	.12	.12¼	.12½
NORTH LOUISIANA—						
58-60 437 end point (U. S. Motor)	.10⅜	.11¼	.11¼	.11½	.11½	
64-66 375 end point	.11½	.12	.11¾	.12	.12	.12¼
ARKANSAS—						
58-60 437 end point (U. S. Motor)	.10¾	.11	.11	.11½	.11½	
64 66 375 end point	.11½	.11¾	.11½	.11¾	.12	
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.13¾	.14	.14	.14¼	.14¼	.14½
PENNSYLVANIA—						
52 Naphtha	.12½	.12¾	.12½	.12¾	.12½	.12¾
54 Naphtha	.12¾	.13	.12¾	.13	.12¾	.13
56 Gasoline	.13	.13⅛	.13	.13⅛	.13	.13¼
58 Gasoline	.13⅛	.13¼	.13⅛	.13¼	.13¼	.13½
60 Gasoline	.13½	.14	.13½	.14	.13¾	.14
62 Gasoline	.14⅛	.14¾	.14⅛	.14¾	.14⅛	.14¾
64 Gasoline	.14¾	.15	.14¾	.15	.14¾	.15
66 Gasoline	.15¾	.16	.15¾	.16	.15¾	.16
68-70 Gasoline	.17¾	.18	.17¾	.18	.17¾	.18
CALIFORNIA—						
54 58 437 end point (U. S. Motor) domestic	.12	.12½	.12	.12½	.12	.12½
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 end point (Naphtha)	.10½	.10⅝	.10¾	.11	.11	
56-58 450 end point	.10½	.10⅝	.10¾	.11	.11	
58 60 437 end point (U. S. Motor)	.10¾	.11	.11	.11¼	.11¼	.11½
60-62 400 end point	.11¼	.11½	.11⅜	.12	.11¾	.12
64-66 375 end point	.11⅝	.11⅞	.12	.12¼	.12⅛	.12¼
68-70 360 end point	.12	.12¼	.12¼	.12½	.12½	.12¾

*Colorado points.

NATURAL GASOLINE

	Aug. 24		Aug. 17		Aug. 10	
OKLAHOMA (Group 3)—						
Grade AA, 80 87.9, 375 e.p., rec. 90%	.09¾	.09⅞	.09⅛	.09¼	.08¾	
Grade A, 72-79.9, 375 e.p., rec. 90%	.09¾	.10	.09¼		.08¾	.08⅞
Grade BB, 84-92, 375 e.p., rec. 85%	.09½	.09⅝	.08⅞	.09	.08⅝	.08½
Grade B, 76-83.9, 375 e.p., rec. 85%	.09½	.09⅝	.09		.08⅝	.08½
Grade C, 80-90, 375 e.p., rec. 78%	.09¼	.09½	.08¾		.08⅛	.08¼
NORTH TEXAS—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09¾	.10	.09¼		.08¾	
Grade A, 72-79.9, 375 e.p., rec. 90%	.09¾	.10	.09¼		.08¾	
Grade BB, 84 92, 375 e.p., rec. 85%	.09½	.09¾	.09		.08⅝	.08½
Grade B, 76-83.9, 375 e.p., rec. 85%	.09½	.09¾	.09	.09⅛	.08⅝	.08½
Grade C, 80 90, 375 e.p., rec. 78%	.09¼	.09½	.08¾	.09	.08⅛	.08¼
NORTH LOUISIANA—						
Grade A, 72-79 9, 375 e.p., rec. 90%	.10	.10¼	.09⅛	.09⅜	.09	.09⅛
Grade B, 76 83.9, 375 e.p., rec. 85%	.09⅞	.10⅛	.09⅛	.09⅜	.08⅞	.09
Grade C, 80-90, 375 e.p., rec. 78%	.09¾	.10	.09	.09¼	.08⅞	.09
CALIFORNIA—						
75-85, 375 390 end point	.15½	.16	.15½	.16	.15½	.16
CHICAGO DISTRICT (Based on Group 3)—						
Grade AA, 80 87.9, 375 e.p., rec. 90%	.09½	.09¾	.09		.08⅝	.08¾
Grade A, 72 79 9, 375 e.p., rec. 90%	.09½	.09¾	.09		.08⅝	.08¾
Grade BB, 84-92, 375 e.p., rec. 85%	.09¼	.09½	.08¾	.09	.08¼	.08½
Grade B, 76 83.9, 375 e.p., rec. 85%	.09¼	.09½	.08¾	.09	.08¼	.08½
Grade C, 80 90, 375 e.p., rec. 78%	.09	.09¼	.08½	.09	.08⅛	.08¼

MOTOR NATURAL GASOLINE

	Aug. 24		Aug. 17		Aug. 10	
OKLAHOMA (Group 3)—						
60-62 450 end point	.10¼	.10⅜	.10¼	.10⅜	.10½	.10¾
64-66 437 end point	.10¼	.10½	.10¼	.10½	.10¾	
NORTH TEXAS—						
64 66 437 end point	.10¼	.10⅜	.10¼	.10⅜	.10⅝	.10¾
PENNSYLVANIA—						
*60-62	.13	.13¼	.13	.13¼	.13½	.13¾
*64-66	.13¼	.13½	.13¼	.13½	.13¾	.14
*66-68	.13½	.13¾	.13½	.13¾	.13¾	.14
*68-70	.13½	.13¾	.13½	.13¾	.14	.14¼
CHICAGO DISTRICT (Based on Group 3)—						
60-62 450 end point	.10½		.10½		.11	
64-66 437 end point	.10½	.10¾	.10½	.10¾	.11	.11¼

*At Sistersville, W. Va.

BURNING OIL

	Aug. 24		Aug. 17		Aug. 10	
KANSAS—						
41 43 water white Kerosene	.09½	.09⅝	.09	.09⅛	.08¼	.08½
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.09	.09½	.08½	.08⅞	.07¾	.08
42-44 water white Kerosene	.09½	.09¾	.09¼		.08¾	.08½
NORTH LOUISIANA—						
41-43 prime white Kerosene	.09¼	.09½	.08½	.08¾	.08	.08¼
ROCKY MOUNTAIN STATES—						
*40-41 water white Kerosene	.12	.12¼	.11½	.11¾	.11¼	.11½
NORTH TEXAS—						
41-43 water white Kerosene	.09	.09⅜	.08⅜	.08⅝	.07½	.07¾
ARKANSAS—						
41-43 water white Kerosene	.09¼	.09½	.08½	.08¾	.08	.08¼
PENNSYLVANIA—						
43 Kerosene prime white	.09½	.09¾	.09½	.09¾	.09½	.09¾
45 Kerosene water white	.09¾	.10	.09¾	.10	.09¾	.10
46 Kerosene water white	.10½	.10¾	.10½	.10¾	.10	.10¼
47 Kerosene water white	.11	.11¼	.11	.11¼	.11	.11¼
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom Neutral	.08½	.08¾	.08½	.08¾	.08½	.08¾
36 Miners' Neutral	.06¾	.07	.06¾	.07	.06¾	.07
300 Mineral Seal	.08¼	.08½	.07¾	.08	.07¾	.08
CALIFORNIA—						
38-40 water white (high burning test)	.07½	.08	.07½	.08	.07½	.08
Engine distillate, 43 45 445 end point	.09¾	.10	.09¾	.10	.09¾	.10
Engine distillate, 42-44 480 end point	.09¼	.09½	.09¼	.09½	.09¼	.09½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.09	.09½	.08¾	.09	.08	
42-44 water white Kerosene	.09½	.09¾	.09¼	.09½	.08½	

*Colorado points.

FUEL OILS

	Aug. 24		Aug. 17		Aug. 10	
KANSAS—						
24-26 Fuel Oil	1.50	1.55	1.40	1.45	1.35	1.40
34 36 Gas Oil	.04¾		.04⅝	.04¾	.04½	.04⅝
38-40 Distillate	.05⅝	.05⅞	.05½		.05¼	.05½
OKLAHOMA (Group 3)—						
Below 22 Fuel Oil (sellers' cars)	1.32½	1.35	1.30	1.32½	1.25	
22-26 Fuel Oil (sellers' cars)	1.37½	1.40	1.35	1.37½	1.27½	1.30
24 26 Fuel Oil (sellers' cars)	1.42½	1.45	1.37½	1.40	1.30	1 35
26-20 Fuel Oil (sellers' cars)	1.50	1.55	1.45		1.35	1.37½
28 30 Fuel Oil (sellers' cars)	1.55	1.60	1.50	1.55	1.45	1.50
32-36 Gas Oil (cracking stock)	.04½	.04⅝	.04½	.04⅝	.04¼	.04⅜
36-38 Distillate	.05¼	.05½	.05	.05¼	.04¾	.05
38-40 Straw Distillate	.05½		.05¼	.05⅜	.05	.05¼
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.47½	1.50	1.50		1 45	1.50
32-36 Gas Oil (straw)	.04½		.04¼	.04⅝	.04¼	.04⅜
38-40 Straw Distillate	.05⅛	.05¼	.05⅛	.05¼	.05	.05¼
NORTH LOUISIANA—						
18-20 Fuel Oil	1.32½	1.37½	1.32¼	1.37½	1.32½	1.37½
32-36 Gas Oil (straw)	.04¾	.05	.04½	.04¾	.04½	.04¾
32-36 Gas Oil (dark)	.04½	.04¾	.04½	.04¾	.04½	.04½
36-38 Distillate	.05	.05¼	.05		.04¾	.05
ARKANSAS—						
38-40 Distillate	.05¼	.05½	.05	.05¼	.04¾	.05
32-36 Gas Oil (straw)	.04½	.04¾	.04¼	.04¾	.04½	.04¾
16 20 Refinery Fuel Oil	1.25	1.30	1.22½	1.30	1.20	1 25
GULF COAST (South Texas)—						
Gas Oil	.05⅝	.05¾	.05⅝	.05¾	.05⅝	.05¾
Fuel Oil	1.75	1.85	1.75	1.85	1.75	1.85
PENNSYLVANIA—						
30-34 Fuel Oil	.05¾	.05⅞	.05¾	.05⅞	.05¾	.05⅞
36-40 Fuel Oil	.06¼	.06½	.06¼	.06½	.06¼	.06½
CALIFORNIA—						
33-36 Distillate	.04	.04¾	.04	.04¾	.04	.04¾
27 32 Distillate	.03¾	.04	.03¾	.04	.03¾	04
15-20 Fuel Oil (at tide water)	1.00	1.04	1.00	1.04	1.00	1.04
27 plus Diesel	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3	1.40	1.45	1 37½	1.40	1.30	1.35
22-26 Fuel Oil (sellers' cars) Group 3	1.35	1.40	1.35	1 37½	1.25	1.30
18-22 (Group 3)	1.30	1.35	1.30	1.32½	1.25	1.27½
18-20 (Smackover)	1.25	1.30	1.25	1.27½	1.20	1 25
32-36 Gas Oil	.04¼	.04½	.04¼	.04⅜	.04¼	.04⅜
36 38 Distillate	.05	.05¼	.05	.05¼	.04⅜	.05
38-40 Straw Distillate	.05¼	.05½	.05¼	.05½	.05⅛	.05¼

LUBRICATING OILS AND WAX

	Aug. 24		Aug. 17		Aug. 10	
OKLAHOMA (Group 3)—						
70 80 vis., 2½ color, 20-25 cold test	.06	.07	.06	.07	.06	.07
100 vis., 3 color, 20 25 cold test	.06½	.07	.06½	.07	.06½	.07
100 vis, 2 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.09¾		.09¾		.09¾	
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
180 vis., 4 color, 23-28 cold test	.10	.10¼	.10	.10½	.10	.10¼
180 vis., 3 color, 23-28 cold test	.10¼	.11½	.10¼	.11½	.10¼	.11½
200 vis., 4 color, 23-28 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
200 vis., 3 color, 23 28 cold test	.11¼	.12¼	.11¼	.12¼	.11¼	.12¼
220 vis., 4 color, 25-30 cold test	.13		.13		.13	
220 vis , 3 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
240 vis., 4 color, 25 30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 3 color, 25 30 cold test	.14½	.15	.14½	.15	.14½	.15
280 vis., 4 color, 25-30 cold test	.15½	.16½	.15½	.16½	.15½	.16½
280 vis., 3 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
180 vis., 5 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
200 vis , 5 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
270 vis., 5 color, 25-30 cold test	.12	.12¾	.12	.12¾	.12	.12¾
240 vis., 5 color, 25-30 cold test	.13	.14	.13	.14	.13	.14
280 vis., 5 color, 25 30 cold test	.15	.16	.15	.16	.15	.16
Cylinder Stocks:						
180-200 vis., S. R. green, 40-45 cold test	.08¼	.11	.08¼	.11	.08¼	.11
190-200 vis., S. R. green, 40-45 cold test	.08	.08½	.08	.08½	.08	.08½
170-190 dark green, 40-45 cold test	.06	.06½	.06	.61⁄2	.06	.06½
190-200 vis. @ 210 "D" Bright Stock	.33	.35	.33	.35	.33	.35
200-210 vis. @ 210 "E" Bright Stock	.30	.31	.30	.31	.30	.31
150 vis. @ 210 "E" Bright Stock	.27	.28	.27	.28	.27	.28
150 vis. @ 210 "D" Bright Stock	.28	.31	.28	.31	.28	.31
Waxes:						
124-126 White Crude Scale Wax	.04¾		.04¾		.04¾	
PENNSYLVANIA—						
150, 3 color	.23¼		.23		.23	
180, 3 color	.26½		.26½		.26½	
200, 3 color	.28¾		.28½		.28½	
220, 3 color	.31		.30		.30	
600, steam refined	.13		.13½		.13½	
635, steam refined	.16¾		.17		.17	
650, steam refined	.17½		.18		.18	
600, Pennsylvania flash	.25½		.25½		.25½	
630, Pennsylvania flash	.33		.33		.33	

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

*550, E filtered	.19		.19		.19	
600, E filtered	.19½		.19½		.19½	
*600, E filtered	.20½		.20½		.20½	
600, D filtered	.27		.26½		.26½	
550, E filtered	.18		.18		.18	
550, D filtered	.22		.22		.22	
Pennsylvania Bright Stock	.41½		.41½		.41½	
122-124 White Crude Scale Wax	.05¼	.05⅜	.05¼	.05⅜	.05¼	.05⅜
†124 126 White Crude Scale Wax	.05¾	.05½	.05¾	.05½	.05⅜	.05½

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black			.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.08	.08½	.07½	.08	.07½	.08
No. 3 color, 200 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 3½ color, 300 vis., pale oil	.12½	.13	.12½	.13½	.12½	.13½
No. 3¾ color, 500 vis., pale oil	.14½	.15	.14½	.15	.14½	.15
No. 4 color, 750 vis., pale oil	.17½	.18	.18½	.19	.18½	.19
No. 2 plus color, 200 vis., pale filtered	.21½		.21½		.21½	
No. 2 color, 300 vis., pale filtered	.24½		.24½		.24½	
No. 2½ color, 500 vis., pale filtered	.27½		.27½		.27½	
No. 2½ color, 750 vis., pale filtered	.35½		.35½		.35½	
No. 5 to 6 color, 200 vis., red oil	.09½	.10	.09½	.10	.09½	.10
No. 5 to 6 color, 300 vis., red oil	.11½	.12	.11½	.13	.11½	.13
No. 5 to 6 color, 500 vis., red oil	.12½	.13	.12½	.13	.12½	.13
No. 5 to 6 color, 750 vis., red oil	.16	.16½	.16½	.17½	.16½	.17½
CALIFORNIA—						
130 vis., 2½-3 color	.10	.11½	.10	.11½	.10	.11½
200 vis., 2½-3 color	.13½	.14½	.13½	.14½	.13½	.14½
300 vis., 3 -3½ color	.15	.16	.15	.16	.15	.16
350 vis., 3½-4 color	.16½	.17½	.16½	.17½	.16½	.17½
400 vis., 3½-4 color	.18	.19	.18	.19	.18	.19
Red Neutrals:						
200 vis., 4½-5 color	.12	.13	.12	.13	.12	.13
300 vis., 5 -6 color	.13	.14	.13	.14	.13	.14
400 vis., 5 -6 color	.15	.16	.15	.16	.15	.16
500 vis., 4½-5 color	.18	.19	.18	.19	.18	.19
500 vis., 6 -6½ color	.16	.17	.16	.17	.16	.17
600 vis., 6½ plus color	.17	.18	.17	.18	.17	.18

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

Gasoline:	Aug. 24	Aug. 17	Aug. 10
U. S. Motor, 58 60 437	.13	.14½	.14½
Export, 64-66 375	.14	.16	.16
Kerosene, prime white, 41-43	.11	.10	.10
*Bunker Oil, 14 16, per bbl.	1.75	1.75	1.75
*Diesel Oil, 28-30, per bbl.	2.50	2.50	2.50
Gas Oil, 28 plus	.06¾	.06¾	.06¾
Furnace Oil (tankwagon)	.11½	.11	.11
Cylinder Oil, light filtered, 600 s.r.	.29	.29	.29
Bright Stock, No. 5, 150 vis., at 212 F.	.42	.41	.41
White Neutral, No. 1, 170 vis., 1 color	.37	.37	.37
Spindle Oil, No. 1 red, 230 vis., 5½ color	.17½	.17	.17
Pale Oil, "25," 170 vis., 3½ color	.13	.13	.13
Pale Oil ,"28," 100 vis., 2 color	.08	.08	.08
Red Oil:			
No. 3, 160 vis., 7 color	.11	.11	.11
No. 2, 212 vis., 5½ color	.12	.12	.12
No. 1, 265 vis., 5½ color	.13½	.13½	.13½
Polar, 295 vis., 6 color	.14	.14	.14
Paraffin Wax, refined:			
120-122 a.m.p., per lb.	.06	.06	.06
125-127 a.m.p., per lb.	.06⅛	.06⅛	.06⅛
130-132 a.m.p., per lb.	.06½	.06½	.06½
135-137 a.m.p., per lb.	.07	.07	.07
Petrolatum, in bbls., per lb.:			
Dark green	.01⅞	.01⅞	.01⅞
Amber	.03⅛	.03⅛	.03⅛
Cream	.05½	.05½	.05½
Lily white	.07½	.07½	.07½
Snow white	.08½	.08½	.08½

*Lighterage 5.5c a barrel extra.

NEW YORK CASE EXPORT PRICES

	Aug. 24	Aug. 17	Aug. 10
Gasoline, U. S. Motor, 58-60	.28.90	.28.90	.28.90
Kerosene:			
Standard white Kerosene	.19.65	.19.40	.19.15
Water white Kerosene	.21.15	.20.90	.20.65

LOS ANGELES EXPORT PRICES

	Aug. 24		Aug. 17		Aug. 10	
Kerosene water white	.05½	.06½	.05½	.06½	.05½	.06½
U. S. Motor Gasoline, 54-56 437 e.p.	.10	.10½	.10	.10½	.10	.10½

CRUDE OIL PRICES

OKLAHOMA, KANSAS AND NORTH TEXAS

***Prairie Oil & Gas Co.**

(Oklahoma, Kansas and North and East Central Texas)
(Effective May 15)

28° to 28.9°	$1.65
29° to 29.9°	1.73
30° to 30.9°	1.81
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.21
36° to 36.9°	2.29
37° to 37.9°	2.37
38° to 38.9°	2.45
39° to 39.9°	2.53
40° to 40.9°	2.61
41° to 41.9°	2.69
42° to 42.9°	2.77
43° to 43.9°	2.85
44° to 44.9°	2.93
45° to 45.9°	3.01
46° to 46.9°	3.09
47° to 47.9°	3.17
48° to 48.9°	3.25
49° to 49.9°	3.33
50° to 50.9°	3.41
51° to 51.9°	3.49
52° and above	3.57

*Other major purchasers except as noted below.

Champlin Refining Co.
(Garber and Tonkawa)
(Effective May 15)

Schedule based on Prairie Oil & Gas Co. paying 10 cents additional for each grade of crude above 38° gravity.

Humble Oil & Refining Co.
(Effective May 15)

(North and East Central Texas, Ranger, Mexia, Powell, Richland, Wortham, Currie, Moran, Big Lake, Nacona and Lytton Springs)

Same prices as Prairie Oil & Gas Co. schedule. Postings below 28° gravity 8 cents less for each degree, effective June 21.

Magnolia Petroleum Co.
(Effective May 15)

(Oklahoma, Kansas and North and East Central Texas, except Corsicana heavy, and Lytton Springs of South Central Texas)

Below 28°	$1.30

Other grades same as Prairie Oil & Gas Co.

Iatan	$1.15
Corsicana heavy	1.25
Panola County:	
30° to 34.9°	$1.95
35° to 37.9°	2.10
38° and above	2.25

TEXAS PANHANDLE

Kay County Gas Co.
Magnolia Petroleum Co.
(Effective May 15)

28° to 28.9°	$1.35
29° to 29.9°	1.40
30° to 30.9°	1.45
31° to 31.9°	1.50
32° to 32.9°	1.55
33° to 33.9°	1.60
34° to 34.9°	1.65
35° to 35.9°	1.70
36° to 36.9°	1.75
37° to 37.9°	1.80
38° to 38.9°	1.85
39° and above	1.90

Humble Oil & Refining Co.
(Effective June 21)

39° to 39.9°	$1.90
40° to 40.9°	1.95
41° to 41.9°	2.00
42° to 42.9°	2.05
43° to 43.9°	2.10
44° and above	2.15

Grades below 39° gravity same as posted by Magnolia Petroleum Co. and Kay County Gas Co.

Plains Pipe Line Co.
(August 1)

28° to 28.9°	$1.10
29° to 29.9°	1.15
30° to 30.9°	1.20
31° to 31.9°	1.25
32° to 32.9°	1.30
33° to 33.9°	1.35
34° to 34.9°	1.40
35° to 35.9°	1.45
36° to 36.9°	1.50
37° to 37.9°	1.55
38° to 38.9°	1.60
39° and above	1.65

WEST TEXAS

Kay County Gas Co.
(Crane, Upton and Crockett Counties.
(Effective August 11)

Below 26°	$1.20
26° to 26.9°	1.25
27° to 27.9°	1.30
28° to 28.9°	.135
29° to 29.9°	1.40
30° to 30.9°	1.45
31° to 31.9°	1.50
32° to 32.9°	1.55
33° to 33.9°	1.60
34° to 34.9°	1.65
35° to 35.9°	1.70
36° and above	1.75

*GULF COAST

****Humble Oil & Refining Co.**
(Effective May 15)

Grade A	$1.60
Grade B—	
Below 25°	1.50
25° to 25.9°	1.55
26° to 26.9°	1.60
27° to 27.9°	1.65
28° to 28.9°	1.70
29° to 29.9°	1.75
30° to 30.9°	1.80
31° to 31.9°	1.85
32° to 32.9°	1.90
33° to 33.9°	1.95
34° to 34.9°	2.00
35° and above	2.05
Boling (December 26)	1.50
High Island (Sun Oil Co.) (Apr. 30)	1.40

The Texas Company
(Effective June 8)

Grade A	$1.60
Grade B	1.50
‡Light Crude—	
35° to 35.9°	2.05
36° to 36.9°	2.10
37° to 37.9°	2.15
38° to 38.9°	2.20
39° to 39.9°	2.25
40° and above	2.30

**The Sun Pipe Line Co. and Gulf Pipe Line Co.'s postings same as Humble Oil and Refining Co.'s, except for Spindletop crude.

‡The Texas Company's postings on light crude under 35° gravity are same as Humble Oil & Refining Co.'s grades and prices for Grade B crude.

*Gulf Pipe Line Co., Magnolia Petroleum Co., the Sun Pipe Line Co. and The Texas Company post separate schedule for Spindletop crude as follows:

(Effective August 6)

Spindletop Heavy—	
Grade A	$1.25
Grade B	1.15
Spindletop Light—	
Below 25°	1.15
25° to 25.9°	1.20
26° to 26.9°	1.25
27° to 27.9°	1.30
28° to 28.9°	1.35
29° to 29.9°	1.40
30° to 30.9°	1.45
31° to 31.9°	1.50

Note: Spindletop Grade B not posted by The Texas Company. The Texas Company prices effective August 9.

SOUTH CENTRAL AND SOUTHWEST TEXAS

***Magnolia Petroleum Co.**

Luling (contract) (Eff. May 18)	$1.30
Mirando (Webb, Jim Hogg and Zapata Counties) (May 15)	1.25
Rockdale-Minerva (Milam County)	1.25
Thrall	1.00
Calliham (Live Oak and McMullen Counties) (May 15)	1.75
§Lockhart (Lytton Springs)	
Somerset (Grayburg Pipe Line Co.):	
(Effective May 17)	
28° to 28.9°	$1.25
29° to 29.9°	1.35
30° to 30.9°	1.71
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.20
36° to 36.9°	2.29
37° to 37.9°	2.37
38° and above	2.45

*Texpata Pipe Line Co. and Humble Pipe Line Co. also post to Mirando Field paying same prices as Magnolia Petroleum Co.

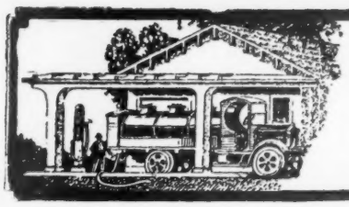
§Lockhart prices same as for North and East Central Texas. Lockhart posted by Magnolia Petroleum Co. and Humble Oil & Refining Co.

ARKANSAS AND NORTH LOUISIANA

Standard Oil Co. of Louisiana
(Effective May 18)

Caddo:	
Below 26° (July 24)	$1.40
26° to 28.9° (July 24)	1.55
29° to 31.9° (July 24)	1.70
32° to 34.9°	2.25
35° to 37.9°	2.35
38° and above	2.45
Homer below 31°	1.85
31° to 32.9°	2.00
33° to 34.9°	2.10
35° and above	2.20
Haynesville below 33°	2.00
33° and above	2.10
El Dorado below 33°	2.00
33° to 34.9°	2.10
35° to 36.9°	2.20
37° and above	2.30
Bull Bayou, 32° to 34.9°	1.95

(Continued on Page 156)



TANK WAGON MARKETS

Tankwagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Aug. 24.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)
Main Service Station Price

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Chicago Dist.—				
†Less than 100 gals.	19.0	21.0	...	15.5

Tank wagon prices on April 19, 1922; g. up 1½c; May 8, up 1c; June 27, g. and k. up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 20, g. up 2c; Jan. 12, 1924, g. up 2c; k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c; April 19, g. down 1c; July 14, g. up 1c; Aug. 25, g. down 2c, k. down 1c; Sept. 1, g. down 1c; Feb. 4, 1926, g. up 1c; k. up 1c; April 16, 1926, k. up 1c; April 24, 1926, k. up ½c; April 29, 1926, g. up 1c, k. up ½c; May 6, 1926, k. up ½c; May 17, g. and k. up 1c July 1, k. down 1c; July 3, k. down 1c; Aug 13, k. up 1c; Aug. 24, k. up 1c.

Decatur, Ill.	19.2	21.2	...	16.0
E. St. Louis	18.1	20.25	...	15.1
Joliet	19.4	21.4	...	16.2
Peoria	19.2	21.2	...	16.0
Quincy	19.2	21.2	...	15.8
Davenport, Ia.	21.5	23.5	2.0	16.4*
Des Moines	21.5	23.5	2.0	16.4
Keokuk	21.5	23.5	2.0	16.4
Sioux City	18.9	20.9	2.0	16.0
Duluth, Minn.	22.5	24.5	2.0	17.1
Minneapolis	22.2	24.2	2.0	17.1
La Cross, Wis.	22.2	24.2	2.0	16.9
Milwaukee	21.1	23.1	2.0	15.8
Madison	21.3	23.3	2.0	16.0
Detroit, Mich.	21.8	23.8	2.0	16.7
Grand Raphis	21.7	23.7	2.0	16.6
Saginaw	21.9	23.9	2.0	16.8
Evansville, Ind.	22.0	24.0	3.0	16.0
Ft. Wayne	22.2	24.4	3.0	16.4
Indianapolis	22.2	24.2	3.0	16.2
South Bend	22.4	24.4	3.0	16.4
Fargo, N. D.	23.9	25.9	2.0	19.1
Huron, S. D.	23.5	25.5	3.0	17.6
Sioux Falls	22.0	24.0	3.0	17.1
*K. C. Mo.	21.9	23.9	3.0	14.8
*Springfield	21.8	23.8	3.0	15.7
*St. Louis	20.6	22.9	2.5	15.5
*St. Joseph	21.0	23.0	2.5	15.4
‡Wichita, Kan.	19.8	21.8	2.0	15.3
Bartlesville, Ok.	20.8	22.8	3.0	15.3

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	21.0	15.5
V. M. & P. naphtha	23.0	16.5
Cleaners naphtha	21.0	17.5

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

*State tax is 2c. Remainder is city tax.
†Quantity price on more than 100 gallons, 18.0.
‡At all Kansas points a discount of 1 cent a gallon is allowed from the tankwagon postings on dumps of 50 gallons or more.

The following monthly rebate system is effective on tankwagon schedules throughout the territory of Standard Oil Co. of Indiana: Over 750 gallons, ½c; over 2,000 gallons, ¾c; over 3,000 gallons, 1c; over 6,000 gallons, 1½c; over 10,000 gallons, 2c. If quantity bought during the year is equal to 12 times the monthly agreed purchases the discount will be paid or credited on the entire quantity less monthly payments. Service station customers will receive discount of 1 cent a gallon on purchases amounting to 200 gallons a month or 2,400 gallons a year; and 2 cents a gallon on 600 gallons a month or 7,200 gallons a year.

STANOLIND FURNACE OIL

(Standard Oil Co. of Indiana)

Less than 100 gallons	10.0
100 to 399 gallons	9.5
400 or more gallons	9.0

SOUTHWESTERN DISTRICT

***Magnolia Petroleum Co.**

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Dallas, Tex.	†19.0	19.0	1.0	14.0
Fort Worth	†19.0	19.0	1.0	14.0
Houston	†21.0	21.0	1.0	14.0
San Antonio	†19.0	19.0	1.0	14.0
El Paso	†22.0	22.0	1.0	15.0
Texarkana	†20.0	20.0	1.0	15.0
Muskogee, Ok.	20.0	23.0	3.0	14.0
Oklahoma City	18.0	21.0	3.0	14.0
Tulsa	20.0	23.0	3.0	14.0
Little Rock	22.0	25.0	4.0	15.5
Ft. Smith, Ark.	22.0	25.0	4.0	15.5

*The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, ½c; over 2,000 gallons, ¾c; over 3,000 gallons 1c; over 4,500 gallons, 1¼c; over 6,000 gallons, 1½c; over 8,000 gallons, 1¾c; over 10,000 gallons, 2c. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1c; over 300 gallons, a month, 1¼c, over 400 gallons, 1½c; over 500 gallons, 1¾c; over 600 gallons, 2c. The same rule applies for annual purchases as in the tankwagon discounts.

†Magnolia maintains only a retail schedule in Texas with dealers and large consumers allowed a flat 3-cent discount.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
*New Orleans	20.5	23.5	3.0	15.0
Alexandria	20.0	23.0	3.0	16.0
Baton Rouge	19.0	22.0	3.0	14.5
LaFayette	20.0	23.0	3.0	15.5
Lake Charles	20.5	23.5	3.0	16.0
Shreveport, La.	19.0	22.0	3.0	15.0
Memphis, Tenn.	21.5	24.5	3.0	17.0
Chattanooga	23.5	26.5	3.0	17.5
Knoxville	23.5	26.5	3.0	18.0
Nashville	22.5	25.5	3.0	18.0
Bristol	24.0	27.0	3.0	17.5
Little Rock Ark	22.0	25.0	4.0	16.0

*Tax of 3c includes city tax of 1c.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Atlanta, Ga.	25.0	28.0	3.5	19.0
Augusta	25.0	28.0	3.5	19.0
Macon	25.0	28.0	3.5	19.0
Savannah	23.0	26.0	3.5	17.0
Birm'ghm, Ala.	22.0	25.0	2.0	18.5
Mobile	21.0	24.0	3.0	17.0
Montgomery	23.0	26.0	3.0	19.5
Clarksdale, Miss	23.0	26.0	4.0	16.5
Jackson	23.0	26.0	4.0	16.5
Natchez	22.5	25.5	4.0	16.0
Vicksburg	22.5	25.5	4.0	16.0
Jack'ville, Fla.	23.0	26.0	4.0	17.0
Miami	25.0	28.0	4.0	18.5
Pensacola	23.0	26.0	4.0	17.5
Tampa	23.0	26.0	4.0	17.0
Covington	24.0	27.0	5.0	18.0
Louisville	25.0	28.0	5.0	17.0
Lexington, Ky.	25.0	28.0	5.0	18.0

In addition to the state tax of 2c on gasoline, Montgomery has city tax of 1c on gasoline and ½c on kerosene. Prices in Georgia include ½c inspection fee on gasoline and kerosene; in Florida, an inspection fee of 0.125c; in Alabama, an inspection fee of ½c on kerosene only.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Denver, Colo.	22.0	22.0	2.0	17.0
Pueblo	22.0	24.0	2.0	17.0
Casper, Wyo.	22.5	24.5	2.5	15.5
Cheyenne	23.5	25.5	2.5	17.0
Butte, Mont.	24.0	24.0	2.0	19.5
Helena	26.0	28.0	2.0	19.5
Salt Lake, Utah	26.0	28.0	3.5	18.5
Boise, Idaho	27.0	29.0	3.0	20.5
Albuquerque, N. Mex.	28.5	28.5	3.0	19.0

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Atlantic City	19.0	....	...	17.0
Newark, N. J.	19.0	21.0	...	17.0
Annapolis, Md.	21.0	....	2.0	17.0
Baltimore	21.0	24.0	2.0	17.0
Cumberland	21.0	24.0	2.0	17.0
Washington	21.0	24.0	2.0	17.0
Danville, Va.	23.5	....	4.5	17.0
Norfolk	23.5	26.5	4.5	17.0
Petersburg	23.5	26.5	4.5	17.0
Roanoke	23.5	26.5	4.5	17.0
Richmond	23.5	26.5	4.5	17.0
Charleston, W. Va.	22.5	25.5	3.5	17.0
Keyser	22.5	....	3.5	17.0
Parkersburg	22.5	25.5	3.5	17.0
Wheeling	22.5	25.5	3.5	17.0
Charlotte, N. C.	23.5	26.5	4.0	17.0
Hickory	23.5	....	4.0	17.0
Mt. Airy	23.5	26.5	4.0	17.0
Salisbury	23.5	26.5	4.0	17.0
Charleston, S.C.	24.5	27.5	5.0	17.0
Columbia	24.5	27.5	5.0	17.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Albany, N. Y.	21.0	....	...	18.0
*New York	21.0	....	...	18.0
Buffalo	20.0	....	...	18.0
Rochester	21.0	....	...	16.0
Syracuse	21.0	....	...	18.0
Boston, Mass.	21.0	....	...	18.0
Augusta, Me.	24.0	....	3.0	18.0
Manchester, N. H.	23.0	....	2.0	18.0
Burlington, Vt.	23.0	....	2.0	18.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tankwagon price.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
Omaha	21.25	23.25	2.0	16.0
McCook	22.75	24.75	2.0	17.5
Norfolk	21.75	23.75	2.0	16.5
N. Platte	22.75	24.75	2.0	17.25
Scottsbluff	22.25	24.25	2.0	16.75

CALIFORNIA CRUDE PRICES
***Standard Oil Co.-Union Oil Co.**
(Effective March 11)

Gravity—	Long Beach Huntington Beach Richfield Brea-Olinda Rosecrans-Dom'guez Torrance-Inglewood	Whittier La Habra Montebello	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Belridge	Coyote	Santa Fe Springs	Coalinga	Wheeler Ridge	Santa Maria Ventura Salt Lake
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.87	.85	.75	.85	....	.75	.75	.85
16°	.90	.85	.75	.85	....	.75	.75	.85
17°	.94	.85	.75	.85	....	.75	.75	.85
18°	.98	.86	.75	.86	....	.75	.75	.85
19°	1.04	.87	.75	.87	....	.75	.75	.85
20°	1.10	.89	.82	.90	.89	.75	.78	.90
21°	1.16	.91	.90	.98	.91	.86	.81	.97
22°	1.22	.94	1.00	1.06	.94	.93	.85	1.04
23°	1.28	.97	1.11	1.14	.97	1.00	.89	1.11
24°	1.34	1.01	1.22	1.22	1.02	1.07	.93	1.18
25°	1.40	1.05	1.33	1.30	1.08	1.14	.97	1.25
26°	1.46	1.09	1.44	1.38	1.16	1.21	1.01	1.32
27°	1.52	1.13	1.55	1.46	1.24	1.28	1.05	1.39
28°	1.58	1.17	1.66	1.54	1.32	1.35	....	1.46
29°	1.64	1.21	1.77	1.62	1.40	1.42	....	1.53
30°	1.70	1.25	1.88	1.70	1.48	1.49	....	1.60
31°	1.76	....	1.99	....	1.60	1.56	....	1.67
32°	1.84	....	2.10	....	1.72	1.63	....	1.73
33°	1.92	....	2.21	....	1.84	1.70	....	1.79
34°	2.00	....	2.32	....	1.96	1.77	....	1.85
35°	2.08	....	....	....	2.08	1.84	....	1.92
36°	2.16	....	....	....	2.16	....	....	....
37°	2.24	....	....	....	2.24	....	....	....
38°	2.34	....	....	....	2.34	....	....	....
39°	2.44	....	....	....	2.44	....	....	....
40°	2.54	....	....	....	....	....	....	....
41°	2.64	....	....	....	....	....	....	....
42°	2.74	....	....	....	....	....	....	....

*Column 2—Long Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Brea-Olinda, 14 to 30 degrees; Torrance and Inglewood, 14 to 28; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.
Column 3—Whittier and La Habra crudes, 14 to 22 degrees; Montebello, 14 to 30 degrees.
Column 4—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.
Column 6—Santa Fe Springs. Only Union Oil Co. posts below 24 degrees.
Column 9—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura, 14 to 35 degrees. Posted only by Union Oil Co.

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
San Francisco	18.0	22.0	2.0	15.5
Los Angeles	16.5	20.5	2.0	16.5
Fresno	18.5	22.5	2.0	17.5
Reno, Nev.	23.5	27.5	4.0	19.0
Portland, Ore.	19.0	23.0	3.0	16.5
Seattle, Wash.	18.0	22.0	2.0	16.5
Spokane	22.0	26.0	2.0	20.5
Tacoma	18.0	22.0	2.0	16.5
Phoenix, Ariz.	26.0	28.0	3.0	21.5

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline — Tank wagon	Gasoline — Service station	Gasoline — Inclds tax of	Kero. Tank wagon
*Pittsburgh, Pa.	20.0	25.0	...	17.0
*Philadelphia	20.0	25.0	...	17.0
*Scranton	20.0	25.0	...	17.0
*Allentown	20.0	25.0	...	17.0
Altoona	20.0	25.0	...	17.0
*Erie	20.0	25.0	...	17.0
Dover, Del.	22.0	25.0	2.0	17.0
Wilmington	22.0	25.0	2.0	17.0
Spring'd, Mass.	21.0	23.0	...	17.0
Worcester	21.0	24.0	...	17.0
Boston	21.0	24.0	...	17.0
Providence, R.I.	22.0	24.0	1.0	17.0
Hartford, Conn.	23.0	26.0	2.0	16.0
New Haven	23.0	26.0	2.0	17.0

*Pennsylvania tax of 2c is collected by the dealer and paid by him direct to the state.

CRUDE PRICE CHANGES

August 16.—Texhoma Oil & Refining Co., Wichita Pipe Line Co. and White Eagle Oil & Refining Co. reduced crude purchased in the Wichita Falls, Tex., district 5 cents a barrel to conform with the prevailing posted prices.

TANKWAGON PRICE CHANGES

August 18.—Magnolia Petroleum Co. reduced gasoline at Fort Worth 2 cents.

August 19.—Standard Oil Co. of Indiana cut tankwagon and service station prices of gasoline 2.1 cents at Sioux City, Iowa. Standard Oil Co. of New Jersey advanced kerosene prices 1 cent throughout its territory.

August 20.—Standard Oil Co. of New York advanced kerosene 1 cent through out its territory.

August 21.—Magnolia Petroleum Co. reduced gasoline 2 cents at Dallas, Tex.

August 23.—Magnolia Petroleum Co. advanced kerosene 1 cent in Oklahoma.

August 24.—Standard Oil Co. of Indiana advanced kerosene 1 cent throughout its territory. Standard Oil Co. of Nebraska advanced kerosene 1 cent in Nebraska.

Tankwagon and service station prices of gasoline posted by the Magnolia Petroleum Co. at Fort Smith and Little Rock, Ark., have been in error since July 3. The correct prices should have been: Tankwagon, 22 cents; service station, 25 cents.

EMPIRE TEST 135 MILES FROM RAILROAD IN UTAH

The Empire Gas & Fuel Co. has made a location for a wildcat well in Utah and drilling operations will be commenced at once. It will be No. 1 Kimball, Section 6-30s-21e, in San Juan County. The location is on a United States Government permit held by the company, comprising 2,560 acres. The structure is known as the Hart Draw or Gibson Dome.

The nearest railroad station is Thompson, 135 miles away. The road to the well first passes through the town of Moab about 40 miles out, crossing the Grand River there. From that point one travels 58 miles toward Monticello then, leaving that road, 12 miles to the edge of Indian Creek canyon. Material for the well can be conveyed by auto truck this far and will be hauled by teams and wagons the remaining 25 miles. Automobiles, however, may be driven to the well. Indian Creek ranch is located about half way between the point where the road enters the canyon and the well. Telephone lines run from the ranch to Monticello and connect there with the outside world.

The formation in the section where No. 1 Kimball will be drilled, is practically all an eroded sandstone which takes fantastic "gingerbread" shapes. Inscriptions on the rocks and remains of structures show that cliff-dwellers once lived in this region.

The northeast corner of the Empire permit reaches the base of a sheer rock cliff, 400 feet high, and the edge of an inaccessible mesa. The corner itself is 800 feet higher than the bed of Indian Creek, which flows through the permit

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of every degree
of wear there is
a scientific
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to suit its speed
and seal its power

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Shell Union Reaches New High At 29½

Other Stocks Were Inactive; Standard (N.J.) Taking Safe Course in Withholding Expected Increased Dividend

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church Street, New York

NEW YORK, Aug. 23.—Oil stocks were inactive but firm during the past week. Shell Union was the exception, advancing to a new high for all time at 29½.

The confidence with which Wall Street had anticipated an increase in the dividend declaration on Standard of New Jersey common, August 16, proved unjustified, and those who believed they were "in the know" now find themselves speculating on the future action, but with somewhat less confidence than they displayed previously.

One of the most accurate comments was that made in these columns recently, that the Jersey company will increase its dividend just as soon as the management has come to the conclusion that the position of the company and the outlook for the oil industry, in their opinion, combine to justify such a course. Anyone guessing within a few barrels the daily average production of the United States for the week ended December 31, 1926, might be able to anticipate the action of the directors with a fair amount of accuracy, although it might be necessary also to know in advance a few other basic facts, besides.

Over a Period of Years

The holders of common stocks of companies that are conservative in all respects, hold their stocks largely on the average return over a period of years, and do not put too much importance on the action of directors at a single dividend meeting. They know that, over a period of years, they are apt to receive a fair return on their investment. To say, as some did, that the action of the Jersey company directors at the last dividend meeting was disappointing, is only to display a form of impatience.

The common stock of Standard of New Jersey, at, say $40 per share, yields 2½ per cent interest, based on the dividend rate of $1 a year maintained since 1911. As $40 deposited in the average savings bank yields $1.60 a year, or 4 per cent, it is a foregone conclusion that those paying $40 a share for Standard of New Jersey common do so in the expectation that the dividend will be raised in the not so far distant future, probably to a rate which would give a yield in excess of savings bank interest; otherwise, it would save time and money for them to put their money in the savings bank direct.

Confidence in Future

The expectation that Standard of New Jersey common stock will increase its dividend, in the not so far distant future, is based largely on confidence in the ability of the management, and in the general prosperity of the oil industry over a period of years. In order to make the yield, for those paying say $40 a share, exceed savings bank interest, the company would have to pay more than $1.60 a year in dividends; and it is believed by those who are optimistic with regard to the future of oil, that a rate of $2 will soon be inaugurated—perhaps not, however, until next year.

There is one factor which augurs for a rate of at least $2 a year; namely, that an expanding industry needs outside financial support, to a certain extent, and that this outside support, usually from the investment public, can only be enlisted for an industry whose outlook is bright enough to warrant such support, speaking from the viewpoint of actual net return on the investment made by the public. To some extent the action of a common stock issue over a protracted period reflects public confidence, or lack of confidence, in the company represented; and it must be remembered that the public does not place money in an organization in which it has not some confidence.

Standard of New Jersey common stock has not sold below 40 this year, and in 1925 sold no lower than 38¾. It sold this year as high as 46¾ and in 1925 as high as 47¼. This indicates a degree of confidence that cannot be gainsaid. And, in the opinion of some, it indicates belief in the inauguration of a $2 annual dividend rate.

National Supply

National Supply Co. common stock has been unusually active, and is one of the strongest of the oil group. It sold to a new high of 68⅞. It pays $4 annually, the rate having been increased from $3 last year.

Associated Oil

Paul Shoup, long associated with Pacific Oil Co. and Associated Oil Co., has severed his connection as president and chairman of the latter concern. Mr. Shoup is executive vice president of the Southern Pacific Railroad. He is succeeded in Associated Oil by Axtell Byles as president, and William Humphreys as chairman. Mr. Humphreys is also chief counsel of the Associated Oil Co.

Associated Oil Co. reports for the six months ended June 30, 1926, net profit of $4,836,089 after interest, depreciation, depletion, Federal taxes, etc., equal to $2.11 a share (par $25), earned on $57,260,300 stock. This compares with $6,380,967, or $2.84 a share, on $56,000,000 stock, in the first half of 1925.

Independent Oil & Gas

Independent Oil & Gas Co.'s net earnings for July, before depreciation and depletion, were $412,383, compared with $384,486 in June and $308,881 in July, 1925.

Transcontinental Oil

Transcontinental Oil Co. reports for quarter ended June 30, 1926, net profit of $283,362, after interest, depreciation, depletion, etc., equivalent to $1.80 a share earned on $15,750,000 outstanding 7 per cent preferred stock. This compares with $105,474, or 66 cents a share on preferred in preceding quarter, and $478,150, or $3.03 a share on preferred in the second quarter of 1925.

Net profit for the first six months of 1926 totaled $388,836, equal to $2.46 a share on preferred, against $1,066,820, or $6.77 a share on preferred in the first half of the previous year.

Chesebrough Manufacturing

The Chesebrough Manufacturing Co. declared an extra dividend of 25 cents a share and the regular quarterly dividend of 75 cents, both payable September 30 to stockholders of record September 10. In the two preceding quarters extra dividends of 25 cents each were also declared.

Borne Scrymser

Stockholders of the Borne Scrymser Co. have approved the change in par value from $100 to $25. Stockholders will receive four new shares for each old share, with cash adjustment being made for fractional shares.

Pan American Western

The Pan American Western Petroleum Co. and subsidiaries report for the six months ended June 30, 1926, net profit of $1,627,118 after depletion, depreciation, interest and Federal taxes, equivalent to $3.25 earned on 500,010 no par value shares of combined Class A and B stocks.

The consolidated income account for the six months ended June 30, 1926, follows:

Gross sales	$16,422,758
Operating costs	11,806,589
Gross profit	$ 4,616,169
Depr., depl., int., taxes	2,989,051
Net profit	$ 1,627,118

The Pierce Petroleum Corp. and subsidiaries report for the first six months of 1926 a loss of $136,084, after expenses, interest, and depreciation, comparing with profit of $490,557 in the first half of 1925.

Simms Petroleum

The Simms Petroleum Co. reports for the first six months of 1926 net income of $347,342 after interest, depreciation, depletion, provision for Federal taxes, etc., equivalent to 51 cents a share earned on 685,703 outstanding shares of $10 par value, as compared with $1,807,636, or $2.64 a share, earned on 685,060 shares in the corresponding period of 1925.

PENNSYLVANIA KEROSENE UP

OIL CITY, Pa., Aug. 20.—Gasoline continues to move well in the Pennsylvania district despite rainy weather which has reduced actual consumption of motor fuel to some extent. The price is holding its own. Kerosene is in a better situation than a week ago with price up and demand good. Neutrals continue good with fine demand and no softening of price. With the exception of filtered stocks, which are in good demand, cylinder stocks are weak. Bright stocks are better than they have been. Fuel oil is holding up well and in good demand. There is a fair amount of buying of wax and the price is holding up well.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE PRICES

Stocks—	Par	Clos. Quot. Aug. 23	Clos. Quot. Aug. 16	1926 High	1926 Low	1925 High	1925 Low	1924 High	1924 Low
Amerada Corp.	..	31	30⅞	31⅞	21⅞	..	..	..	..
Atlantic Ref., com.	100	113¼	110¼	128⅜	97	117½	95⅛	140½	78½
Barnsdall "A"	25	25½	26	33½	23½	33½	18¾	29½	14
California Pet., com.	25	32	32½	38⅛	30⅝	34⅜	23⅞	29	19⅞
Houston Oil	100	58¾	59⅝	72	50½	85	59	82½	61
Independent Oil & Gas	..	28⅞	29⅞	31	20¼	41¼	13½	16¼	5¾
Indian Refining	10	9½	10	13¾	9½	14¼	5½	7	3⅞
Lago Oil & Trans	..	21¾	21¾	24½	19¼	..	..	..	..
Louisiana Oil	10	16	16⅛	19⅝	12	23¾	13¾	..	..
Maracaibo	..	24	23½	28⅞	20¾	35½	20⅝	37½	25⅝
Marland	..	54⅛	55⅞	63⅜	40½	99⅛	32⅝	42	29
Mexican Seaboard	..	11	11¼	13¾	6	22½	9	26¾	14⅛
Mid-Continent Pet.	..	31	31½	41	25⅝	38	25¾	40¼	22⅝
National Supply	50	68½	65½	68½	55½	71	54⅝	72½	64
Oil Well Supply	25	*31	33¾	36	30	28	37⅜	..	..
Pan Amer., B	50	51	51¾	55⅜	39⅛	53⅜	32½	66	44½
Pan. Amer., Western B.	..	37⅝	37¾	46	34	49¾	37¼	..	..
Phillips Pet.	..	47⅝	48	49½	42½	47⅛	36¼	52¼	28½
Producers & Refiners	50	*11	*11	17½	11	32⅝	12½	32½	29¾
Pure Oil, com	..	26⅝	26⅞	31	25⅝	33⅜	25⅛	30¼	20
Royal Dutch, N. Y. sh.	13.40	51⅛	50⅞	57⅝	42⅜	67⅞	48¼	69½	40⅜
Shell Transport	10	*43	*42	48⅞	42	49	39⅝	42	33
Shell Union, com.	..	29½	28⅝	29½	24	28⅜	21⅝	22½	15⅜
Simms Pet.	10	16¾	17½	28⅝	16½	28½	17¾	24	10⅝
Sinclair Consolidated, com.	..	21½	21⅝	24⅞	19⅜	24⅞	17	17½	15
Skelly Oil	25	35¼	34⅞	37⅝	27	32½	21¾	29	17⅛
Standard of California	25	61¼	61½	62⅞	54	67¼	51½	68½	55½
Standard of New Jersey, com.	25	43⅜	43¾	46⅝	40¼	47½	38⅜	41½	33
Sun Oil Co.	..	31	32	41⅝	30⅛	43⅞	38⅜	..	..
The Texas Company	25	54	54	56	48	55	42¾	45⅝	37¾
Texas Pacific Coal & Oil	10	*14	15	15½	12⅛	23⅜	11	15⅛	8⅛
Tide Water Oil	25	30⅜	30½	39¼	30⅛	..	..	..	..
Transcontinental	..	4¾	4⅞	5½	3	5¾	3½	6¼	3¾
Union Oil of California	25	52¼	53¾	58	37½	43⅝	33⅜	39	35½
Union Tank, com.	100	*93	*94	94⅞	84½	‡134	118	132⅞	94
White Eagle Oil & Refining	..	26	26	29⅜	25⅛	31⅜	25⅝	29⅜	23⅛
Standard Oils									
Anglo-American Oil	£1	17⅛	17⅝	19¾	16½	26⅜	17½	18¾	14⅝
Borne Scrymser	25	*285	*295	295	226	240	205	164	150
Buckeye Pipe Line	50	46¾	*47½	59½	47⅝	72	63½	85½	51
Chesebrough Mfg Co.	25	73½	*73	72¾	63	74	48¼	62½	29¼
Continental	10	20⅜	21⅛	25⅞	19¼	31⅛	21⅞	..	..
Crescent Pipe Line	25	*16	*16	16	14½	17½	10	20	11¾
Cumberland Pipe Line	100	*111½	*112	137	108	156	128	148	108
Eureka Pipe Line	100	*48½	49½	63¾	47¾	96	61¼	105	74
Galena Signal, com.	100	*20	*18½	32½	17¼	68½	23½	69¾	62½
Humble Oil & Refining Co.	25	61⅞	61½	68⅛	52	99	42½	43¾	26
Illinois Pipe Line	100	134½	133½	144	131	154½	124	161	123
Imperial Oil, Ltd.	..	36½	36⅝	38¾	32½	39¼	27¼	119	99
Indiana Pipe Line	50	*58	60	68	58	84	87½	100	66
International Pet Co.	10	34	34⅜	35½	28¾	35⅜	22⅛	34⅜	16⅞
National Transit Co.	12.50	14½	*14½	20¾	14½	25½	16⅛	25⅞	20⅝
New York Transit	100	*35	*32½	51½	33¼	79	50	97	54½
Northern Pipe Line	100	*72	*67½	80½	68	88	67½	107½	72
Ohio Oil Co.	25	60	60⅜	67⅜	55⅜	75¼	60	79½	53
Penn.-Mex. Fuel	25	*21	*21	24½	15	44	19	35⅝	27
Prairie Oil & Gas	25	51	51	60¼	48	65½	45¾	269	193
Prairie Pipe Line	100	*125¼	125½	127	122½	129¾	105	111	100
Solar Refining Co.	100	208	212	215	184½	259	200	240	170
South Pen Oil	25	*37½	39½	50	35	‡197	139	176	117
Southwest Pa. Line	100	52½	*50½	56	47½	84	50	89	68
Southern Pipe Line	50	24½	*23¼	74½	61½	103	63	100	80½
Standard of Indiana	25	63⅜	64¾	70½	61⅝	70¾	59½	69⅝	54½
Standard of Kansas	25	21	22	36½	21	46	30¼	50½	32½
Standard of Kentucky	25	123½	123½	134¾	108	137	114¾	121⅞	101
Standard of Nebraska	100	48¼	49¾	‡51⅛	‡42	270	231	262	198
Standard of New York	25	32⅛	33⅛	47¼	30⅝	48⅝	40	48	37¾
Standard of Ohio, com.	100	*302	*291	362	292½	369	338	337½	277
Swan & Finch, com.	25	*17½	*17½	21	18	27	12	28	20
Vacuum Oil	25	*102	103¾	109¾	94⅛	109½	80½	83½	50½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	85	85¾	93¾	82½	98¼	63½	67⅞	56
Tide Water Associated	..	24⅝	24⅞	27	21	..	..	..	..

*Bid, no sales. ‡Old stocks. †New stocks.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Aug. 23	59.06	July 19	59.45	June 14	59.40	
Aug. 16	59.34	July 12	59.43	June 7	58.92	
Aug. 9	59.35	July 2	59.38	May 28	59.81	
Aug. 2	59.76	June 28	60.17	May 24	58.84	
July 26	58.44	June 21	59.91	May 17	57.63	

Special Analysis of Russian Output

Report of Results of Scientific and Commercial Study of Petroleum Production Under the Soviet Oil Trusts

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Aug. 23.—The Soviet Government of Russia desired to obtain a scientific and commercial analysis of the Russian petroleum industry for its own information.

With this object in view the Soviet Government appointed a group of Russian engineers and geologists in which it had confidence and directed them to make the necessary investigation and report. The result has been a voluminous document giving many details which perhaps represents in the most comprehensive way the exact condition of the Russian petroleum industry as of the fiscal year 1924-1925, which fiscal year ended October 1, 1925.

The outstanding fact in connection with this report is that it shows that at the beginning of the fiscal year 1924-1925, there was great uncertainty in respect to the capacity of the market to absorb the output of the Russian oil industry. During the second half of the year this uncertainty was dissipated and the main interest was devoted to speeding up drilling work to take care of demands.

This special and confidential report shows that the output of crude oil by the Russian oil trust in 1924-25, continued increasing and at the end of the year had reached in the whole Soviet Union 7,059,800 tons which in comparison with the demands that had been made upon this oil trust for production made a realization of 103 per cent, or 3 per cent more than the Soviet oil trust had planned. The three oil trusts that were of chief importance, the Asneft, Grosneft, Embaneft, produced most of the oil, the Asneft 4,622,200 tons, the Grosneft 2,026,800 tons and the Embaneft 194,900 tons of the total. The output of the most important district, that of Baku, was almost exactly the amount of production that had been fixed upon as its quota at the beginning of the year.

Controls Price and Output

One statement made in this report indicates conclusively that the Soviet oil trust in its purchasing power constantly exercises an influence on production. It is stated that the Asneft being the monopoly buyer of all oil possesses the ability in the fixing of prices to create conditions stimulating or restraining oil developments.

The report shows percentages of increase of production in the year 1924-1925 in the trusts of general state importance compared with the previous year. This production for 1921-1922 was 13.4 per cent greater than the preceding year, the production of 1922-1923 was 14.9 per cent greater than the previous year, 1923-1924 was 16.9 per cent over the preceding year, and 1924-1925 was 16.9 per cent over 1923-1924.

The report comments upon the fact that the Russian oil industry had shown a methodical and strenuous development of production.

Comment is made upon the fact that the increase of output in Baku was relatively slow notwithstanding the increase of 1924-25 as the output from gushers. This is accounted for by the fact that many old wells were abandoned and others decreased production and there was not sufficient exploitation by new drillings.

Compared to Prewar

In comparison to the prewar production in 1913 the gross output in the Soviet Union for 1924-1925 is equal to 76.4 per cent while the trusts of general state importance alone showed a gross output of 79.3 per cent of the prewar production.

In the Grosny district, however, the production was 167.9 per cent and the Emba district 165.3 per cent, showing it to be greatly in excess of the prewar production of those districts. These increases made up for the decrease of production in the Baku district which was only 63.4 per cent of the prewar production.

This condition is commented upon as resulting from gushers in the Grosny district, more than half of the output of oil being obtained by a few gushers there. In the Baku district oil is obtained by the bailing method.

It is pointed out that the last quarter of the year under consideration, showed a larger increase of production in the Baku district compared with the first months of that year.

It is stated that in the Grosny district the lack of oil refineries to handle the maximum output caused some shutting down of the gushers there.

Increase From Gushers

It is evident, says the report, that the increase of output during the year under review, is due to oil obtained from gushers, the production from gushers increasing as against the previous year from 1,146,100 tons compared with 1,886,500 tons.

The proportion of oil from gushers in the four trusts increased for the year 1924-1925, compared with the previous year, from 19.4 per cent to 27.1 per cent whereas the proportion of mechanical output decreased from 77.7 per cent to 70.7 per cent.

The importance of the production from gushers in the Baku district, it is stated, remains rather modest amounting to 13.6 per cent of the total output for 1924-1925, while the corresponding figures for 1923-1924 and 1922-1923 were 6.8 per cent and 7.2 per cent.

In Grosny the production from gushers increased from 863,900 tons to 1,230,800 tons or 42.5 per cent. At the same time the mechanical output was increased only by 3.5 per cent.

In relation to the general total output, the output from gushers in the Grosny area amounted for 1924-1925 to more than 60 per cent as against 53 per cent in 1923-1924 and 42.7 per cent in 1922-1923.

"In this way, during the last three years," the report says, "there is a decided tendency toward a more intensive increase in the output from gushers than from mechanical methods. The output from gushers has not only a positive but also a negative significance; on the one hand it procures a cheap crude oil, on the other hand it is subject to unexpected fluctuations (especially in Baku) and this disturbs the calculation as to a sure and continual output.

"Therefore the fundamental policy of the trusts is directly towards creating in the future a solid basis in the certainly more expensive but also surer mechanical output.

"Concerning the different methods of mechanical output in the first place it is necessary to state that a rapid increase of output by pumps is forthcoming on account of the corresponding decrease of the bailing method and also partly because of the compressor method."

The output by pumps has increased, the report says, in comparison with the last year 1923-1924 from 268,200 tons to 1,069,700 tons, that is four times augmenting its share in the output from 5.8 per cent to 21.7 per cent.

The report says that an especially great success in this direction of increasing output by pump is shown by Asneft which began to apply the deep pump method only during the past year. Instead of 32,100 tons output by pump in 1923-1924, Asneft increased the output in 1924-1925 to 580,700 tons or an increase of 18 times.

Additional detailed information concerning the Russian oil industry, of especial reliability is given in the following extract of the translation of this report:

Increase in Pumping

"On October 1, 1924, there were 82 deep pumps. At the end of the year, Asneft had increased this number to 818, i.e., installed during the year 736 new pumps. The program called for a minimum of 500 and a maximum of 729 pumps. The increase of deep pumps was especially great during the second half of the year and reached more than 100 pumps per month at the end of the year. However, the percentage of output by pumps remains a very modest one in Baku (14.8 per cent.)

"In Grosny, where the installation of deep pumps started a year earlier, the progress of the realization of the exploitation in 1924-1925 was less intense, principally for the reason that there was a delay in the receipt of the pumps. At the beginning of the year there were 105 pumps in Grosny; at the end of the year the number had increased to 230, while the program called for 300.

"In the total balance, the output obtained through pumps in Grosny amounts to 45.1 per cent as against 22.4 per cent last year.

"In this way, in the sphere of rationalization of methods of exploitation, Grosneft is going ahead if compared with Asneft, an equal percentage of bailing output, while at the latter, there is at the same time a greater percentage of compressor output.

"In the Emba and Kuban-Tshernomorsky districts the output by pumps is predominant. Comparing the above mentioned percentage figures for each kind of exploitation for the last three years, we see a great remove in the direction of the means used for exploitation, improved from a technical point of view and more profitable from an economic point of view.

"The use of deep pumps procures a great economy of power and energy (under some conditions a single well uses on an average one-third to one-fourth of the energy used by the bailing output) and also in labor. Instead of having a special bailing workman for each well, the exploitation by means of deep pumps makes it possible to use one man for several wells. Furthermore, there is a great tendency towards economy in motor energy; instead of motors of usually 100 horse power, motors of 30 horse power are used, giving the energy simultaneously for a whole group of wells.

Replacing Bailing

"The advantage of deep pumps, however, is not limited to the exploitation of wells, but is closely connected with profits in other organizations.

"For instance, in the exploitation of wells by deep pumps, it is sufficient to have wells with a smaller diameter and that means a great economy in materials and cheapens the footage. At the same time, the durability of the wells is considerably greater, as the tubes are more slowly worn out by the output through pumps.

"Besides all other advantages, this method facilitates the system of exploitation of wells. For this reason, the special attention paid to the question of replacing the old archaic method of bailing is incomprehensible, this new method being almost the only one used in the whole American practice.

"In the year 1924-1925 there was also another factor in the process of rationalization of the petroleum industry, although not so perceptible, which helped to extend and to cheapen the management, namely, the electrification of the fields."

Electrification Progress

A taubulation of these figures showing electrification is given and indicates that in the Baku district the output of oil obtained by means of electric power reached 85.6 per cent. It adds that the part of the steam engines is only 7.1 per cent. The report then continues:

"In the Grosny district, in spite of a considerable success in the last year of the electrification, the steam engines, that is, the less economical kind of power, are predominant. The delay in a more rapid transition is due to the fact that the Electrotrust did not send the necessary materials in due time.

"In the Emba district, it should be noted that the use of electro-motors is rapidly growing, the output reaching in 1924-1925 32 per cent of the total output, whereas in the previous year, the output by electric motors was insignificant."

The report states that various tabulations indicating production confirm that the petroleum industry of Russia has entered into a new period of independent development of its own production based on the support given it from the funds of exploited wells as a result of the new drilling. The report says that the importance of the reconstructed wells diminishes from year to year while the importance of new wells increases. This is especially noticeable in Baku and Emba.

Beginning the year 1924-1925 with 2,404 wells the Soviet oil trusts had at the end of that year 2,540 wells, that is, they had increased their funds by 6 per cent. This increase in the number of wells, says the report, is evidently not sufficient.

SAMPLE OF TOPOGRAPHY, TEXAS PANHANDLE

CRUDE OIL PRICES

(Continued from Page 151)

35° to 37.9°	2.10
38° and above	2.25
Cotton Valley	1.20
DeSoto	2.30
Crichton	2.10
Bellevue	1.50
Smackover, below 24°	1.10
24° to 24.9°	1.35
25° to 25.9°	1.40
26° to 26.9°	1.45
27° and above	1.50
*Stephens, Ark., below 26°	1.45
26° and above	1.65
†Calion (East El Dorado)	1.10
§Urania (May 26)	1.25

Other companies posting in these fields are: Gulf Pipe Line Co.; Atlantic Oil Producing Co. in Homer, Haynesville, El Dorado and Smackover; The Texas Company in Caddo, Bull Bayou, DeSoto, Crichton and Smackover.

*Posted by the Atlantic Oil Producing Co. †Posted by the Gulf Pipe Line Co. §Posted by the Louisiana Oil Refining Corp.

ROCKY MOUNTAIN STATES
Ohio Oil Co.—Midwest Refining Co.
(Effective May 17)

Rock Creek (Wyo.)	$2.25
Salt Creek	
29° to 29.9°	1.73
30° to 30.9°	1.81
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.21
36° to 36.9°	2.29
37° and above	2.37
Big Muddy	2.25
Mule Creek	1.75
Grass Creek, light	2.40
Grass Creek, heavy	.90
Elk Basin	2.40
Lance Creek	2.41
Rex Lake	1.45
Osage	2.40
Lost Soldier (contract)	1.35
Greybull-Torchlight	2.15
Hamilton Dome	1.35
Cat Creek (Mont.)	2.40
Sunburst (Mont.) (May 6)	1.05
Florence (Colo.)	1.60
Artesia	1.95
Hogback (N. Mex.)	2.15

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective March 8)

Penna Grade Oil in New York Transit Lines (New York)	$3.40
Bradford District Oil in National Transit Lines (Pennsylvania)	3.40
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.30
Penna Grade Oil in Southwest Pa. Lines (West Virginia)	3.30
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	3.25
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.05
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 17)	2.40
Corning Grade Oil in Buckeye Pipe Line Lines (Ohio) (May 22)	2.55
Somerset Medium Oil in Cumberland Pipe Line Lines (Kentucky) (May 17)	2.50
Somerset Light Oil in Cumberland Pipe Lines (Kentucky) (May 17)	2.65
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (May 19)	1.15
Gaines (Pennsylvania) (Apr. 27)	2.85
Keister (Pennsylvania) (Feb. 15)	2.30

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective May 17)

Lima	$2.48
Wooster	2.55
Illinois	2.37
Indiana	2.25
Princeton	2.37
Plymouth	1.90
Waterloo	1.35
*Western Kentucky, 32.9° and below (May 18)	2.10
33° to 35.9° (May 18)	2.20
36° to 38.9° (May 18)	2.30
39° and above (May 18)	2.40
†Cumberland, Barren and Monroe Counties, Ky., (May 17)	2.65
**Oil in lines of Stoll Oil Refg. Co. in Oil City, Ky.	2.65
**Oil in lines of Stoll Refg. Co. in Tinsley Bottom, Tenn.	2.46
§Oil Springs (Canada) (May 18)	2.95
§Petrolia (Canada) (May 18)	2.88

**Posted by Stoll Oil Refg. Co.
*Posted by Indian Refining Co.
†Posted by Paragon Development Co.
§Posted by Imperial Oil Co., Ltd.

MEXICO
(Effective May 13)

*Tuxpam light (f.o.b. Mex. ports)	$1.35
§Panuco heavy (f.o.b. Mex. ports)	1.15
Tuxpam (New York)	2.15
Panuco (New York)	1.80

*Plus 32.328c tax. §17.631c tax.

GROUP 3 REFINERY TRENDS UNCHANGED

(Continued from Page 28)

the past week, and some bargain offers reported would indicate that still lower prices are in store for the coming week. But, on the other hand, the statistical position of refiners is reported improving and many market observers are at loss to explain just why the steady softening.

Some market critics sensed a slightly improved feeling regarding the gasoline situation Monday and Tuesday. In this connection many refiners contended that the declining market is only temporary.

As far as Oklahoma refiners are concerned, the gasoline stock situation is better than usual. But considerable cheap material offered from north Louisiana, Arkansas and north Texas refiners for northern consumption has been one of the chief disturbing factors forcing Oklahoma refiners to reduce prices to meet competition.

There still is some cheap material being offered from these other districts but the situation is reported to be considerably cleared. This, with the increasing confidence in the crude situation and the belief that these prices will not be reduced in the immediate future, perhaps is the reason for the more optimistic tone.

Gasoline spot demand, although steady, is far from satisfactory, however, and generally speaking, only those refiners meeting competition are getting business. Contract movements are reported excellent, but it is not considered likely that jobbers will attempt to load up on this material, considering the dangerous margin between tankcar and tankwagon prices.

Tankcar prices have declined to such a point now that jobbers in the Standard Oil Co. of Indiana territory are operating on a 5 to 6-cent margin in many cases, which is especially conducive to price wars and unstable conditions. Possibilities that the tankwagon prices might be reduced under these circumstances naturally would discourage buyers from taking out any more gasoline than already disposed of or actually needed.

However, in mentioning the margin between tankcar and tankwagon prices, it must be taken into consideration that tankwagon and service station prices do not mean as much in reference to tankcar markets as formerly. Although the margin between the posted prices may be large, the working margin is lessened very materially by quantity discounts or other forms of concessions. Discounts in the Indiana territory amount to as high as 2 cents a gallon which has to be considered in determining the real operating margin.

Considering the heavy motor consumption of gasoline this month many jobbers are known to be low on stocks which may force some buying before long. One market student made a tour of certain important marketing centers of the Indiana territory the past two weeks and he reported that jobbers in these places invariably had reduced their stocks materially and if the reductions continued at the present rate some buying would have to result in the next few weeks.

Inquiries for September gasoline requirements are due to begin coming in this week although the tankwagon situation may serve as a check to any great amount of future buying. However, September is one of the best gasoline consuming months of the year and the jobbers will have to take out the material, whether in a brief buying flurry or day by day, during the month.

The more optimistic sellers are of the opinion that gasoline prices will not drop lower than the present level barring a tankwagon reduction. They argue that if the tankwagon structure can be maintained only a short time longer the general situation is such that the market will have to strengthen. August has often been a month of low gasoline prices with the market picking up early in September. This opinion is in face of predictions of others that 10-cent gasoline is certain before many weeks.

Kerosenes Advance

The strength of kerosene was reflected in a second tankwagon advance over the Indiana territory, as well as boosts in several other important marketing districts. Kerosene continued one of the features of the market. Following the tankwagon advance in the Indiana territory effective Tuesday refiners attempted to absorb a half cent in tankcars. Although the actual spot market prices were somewhat uncertain Tuesday due to the advance refiners were aided in getting their new asking prices by the acute scarcity of the product.

Gasoline and Naphtha.

The weakness in gasolines was general with all grades slow. One purchase of 200 cars of the 60-62 400 gasoline was made during the week but this was from one refiner and outwardly had little effect on the situation. The price at which this material was bought was not made known but the spot market during the week was from 11¼ to 11⅜ cents.

There was no spot activity of any importance in other gasolines, the 64-66 375 material being especially dull. Exporters purchased from 1,000,000 to 2,000,000 gallons of this from north Texas during the last two weeks but nothing was reported in Oklahoma. This gasoline Tuesday could be bought from 11½ to 11¾ cents.

Numerous offers of U. S. Motors (58-60 437) gasoline were reported as low as 10½ cents but most of these were discounted as not being strictly U. S. Motor fuel. Buyers had no difficulty in filling their needs at 10¾ cents and possibly 10⅝ cents. Refiners in some cases moved gasoline at 11 cents. These prices competed with a few quotations to northern jobbers of 10⅜ cents from north Louisiana refiners and 10⅛ to 10¼ cents from north Texas.

Natural Gasolines.

Additional improvement was felt in natural gasolines during the week and sellers were able to get from a quarter to a half-cent more Tuesday than a week ago. Inquiries continued to come in satisfactory for a steady strengthening. Grade A and Double A gasolines Tuesday were quoted from 9¾ to 10 cents, with B grades at 9½ to 9⅝ cents and Grade C at 9¼ to 9½ cents.

Kerosene and Distillates.

Following the tankwagon advance Tuesday, many refiners put up tank car quotations on kerosene from a quarter to a half-cent, some reporting getting 9½ cents for the 41-43 water white material. Very little kerosene was available at any price and with the autumn demand coming on, the outlook is favorable for higher prices with possibilities that the peak reached in May might be passed. However, it is admitted that kerosene at that price is encouraging toward greater production which would tend to check further price advances.

Distillates also continued to strengthen. Practically no 38-40 material was offered and quotations were from 5½ cents up. There was a little 36-38 distillate available but this was held at a premium. Several refiners are reported to have distillates but are holding them in anticipation of higher prices.

No let-up was noted in the steady demand for fuel oil and gas oil although prices advanced during the week to new high levels since 1921. As with distillates and kerosene, these products also were scarcer than ever before with a minimum price of $1.35 on fuel oil except on gravities as low as 12 to 14 degrees. The 24-26 fuel was quoted at $1.47½ to $1.50 but refiners had none to sell. As for higher gravity fuels, they also were out of the picture. One refiner had a little 28-30 recycle material which he sold for fuel during the week. This was disposed of readily for $1.65 to 1.70 but it was slightly better than ordinary 28-30 fuel.

Overhead gas oil for cracking stock was in demand from 4½ to 4¾ cents. The general situation was the same as for fuel oil and distillates.

Lubricants and Wax.

All grades of lubricants continued steady during the week although prices were unchanged. There was a particularly heavy moving of neutrals from some manufacturers while bright stocks and cylinder stocks also continued strong.

Wax was slow.

GASOLINE SOFT IN TEXAS DESPITE EXPORT BUYING

WICHITA FALLS, Tex., Aug. 23.—Purchases of higher gravity gasolines by two large buyers were the only developments in the north Texas refined market the past week. Outside of this there was little interest, although fuel oil, gas oil, distillates and kerosene remained strong. The purchases failed to strengthen the gasoline market.

The purchases are reported to have amounted to 3,000,000 gallons, including both the 64-66 375 and the 60-62 400 grades. Sinclair Refining Co. is estimated to have bought 2,000,000 gallons of the aviation gasoline for export, paying 11⅜ cents, while The Texas Company took up approximately 1,000,000 gallons of the 400 endpoint material paying from 11⅛ to 11½ cents.

This resulted in a generally better feeling with the removal of considerable distress material but the gasoline situation as a whole continued soft. Other grades found little demand and prices weakened further with the U. S. Motor (58-60 437) gasoline offered in some cases as 10½ cents.

The weak export market still dominates the north Texas gasoline situation as the net price of 11.15 cents paid by the Standard Oil Co. of New Jersey at Baton Rouge, La., on contracts is such that a generally disturbed condition prevails.

Natural gasolines, contrary to refinery material, strengthened. Additional improvement was shown in demand and all prices were from a quarter to a half-cent higher than during the previous week. Grade A was quoted from 9¾ to 10 cents; the B grades from 9½ to 9¾ cents, and Grade C from 9¼ to 9½ cents.

Kerosenes, as mentioned, were strong. The demand was not quite as heavy as in the previous two weeks but the scarcity of material prevented any declines in prices. The 41-43 water white product was still available at 8½ cents, several purchases at this figure being reported.

There was no change in other products.

STANDARD FORMS NEW DIVISION

CHICAGO, Aug. 20.—The Standard Oil Co. of Indiana has organized a new marketing division with headquarters at Green Bay, Wis. The new division will include 18 counties in Wisconsin and 9 counties in Michigan. An office building will be constructed which is expected to be occupied by January 1. This makes the twenty-eighth marketing division including Chicago. The selection for manager has not been made. The territory assigned to this new division was formerly a part of the Milwaukee territory. Green Bay has an excellent port and can be supplied with materials by tankers from Whiting.

REASONS FOR FOREIGN GASOLINE CONSUMPTION

(Continued from Page 39)

equalled shipments for the entire year of 1925. The former exports totaled 1,032,000 bbls., as against 1,052,000 bbls. for the full year of 1925. The figure also compares with 555,000 bbls. exported for the first six months of 1925, making the gain this year 86 per cent.

Another Continental country which has greatly increased its purchases of American gasoline during the first half of 1926 is The Netherlands. The gain in exports to The Netherlands amounts to 129 per cent, exports for the 1926 period being 984,000 bbls. and for the 1925 period, 428,000 bbls.

Other Countries

The increase in the export movement of gasoline is not confined to European countries. Substantial gains are shown in shipments to South America and the Orient. Cuban shipments show a big gain. Gasoline exports to Australia during the first six months totaled 981,000 bbls., compared with 734,000 bbls. for the same period last year, an increase of 33 per cent.

Nevertheless, Europe has been the important factor in the increased shipments. The percentage of European shipments to total exports was marked up considerably during the first half of the year. Of the total exports in 1925, amounting to 31,665,000 bbls., 20,570,000 bbls., or 65 per cent, went to European countries.

Reason for Increase

According to authorities on the export market, the principal reasons for the increased exports to Europe during the first six months of this year were:

First, anticipated increased demand because of the greater use of the automobile.

Second, relatively low stocks of gasoline.

Third, that, generally speaking, supplies of foreign gasoline and of gasoline from foreign crude sources were entirely inadequate to meet the expected increased demand.

It is now believed that stocks have been largely replenished and that for the balance of the year there will be considerable decline in the volume of export shipments to Europe. Nevertheless, the total movement to all countries for the year will probably be close to 25 per cent greater than that of 1925 which in turn was about 10 per cent greater than 1924.

Total exports for the first six months of 1926 as compared with the same period of 1925, follow:

Gasoline Exports First Six Months

	1926 Barrels	1925 Barrels
January	3,426,000	2,356,000
February	3,245,000	2,455,000
March	3,190,000	2,946,000
April	4,402,000	2,613,000
May	4,529,000	2,409,000
June	3,744,000	2,706,000
Total	22,536,000	15,485,000

It is interesting to note that gasoline exports during the first six months of 1926 equalled the ratio of domestic production and imports attained in 1918, the last year of the war, the percentage of exports to the total supply being 15.9 per cent. This compares with 12.2 per cent for the corresponding period of 1925.

Ratio to Domestic Demand

Gasoline exports in 1925, amounting to 31,665,000 bbls., were 12 per cent of the total domestic production and imported gasoline. While gasoline exports have increased 135 per cent since 1918, the proportion of exports to the total supply has shown no marked increase, but mainly a decrease, until the six months' period under discussion. A comparison follows:

Gasoline Production, Imports and Exports, 1918-1925

Year	Production Bbls.	Imports Bbls.	Total Prod. & Imports Bbls.	Exports Bbls.	Per cent Exports to Total Supply
1918	85,007,000	307,000	85,314,000	13,545,000	15.9
1919	94,235,000	203,000	94,458,000	9,098,000	9.6
1920	116,251,000	964,000	117,215,000	15,637,000	13.3
1921	122,764,000	900,000	123,664,000	13,171,000	10.7
1922	147,672,000	1,479,000	149,151,000	14,157,000	9.5
1923	179,903,000	4,555,000	184,458,000	20,736,000	11.2
1924	213,325,000	3,454,000	216,779,000	28,967,000	13.4
1925	259,193,000	3,812,000	263,005,000	31,665,000	12.0

During the World War refining facilities in the United States were concentrated on turning out gasoline and fuel oil to supply the demands of the Allied armies, navies and essential industries. It is noted that in 1918 gasoline exports amounted to 15.9 per cent of the total American supply, the highest rate on record, except for the six months period of 1926.

At the close of the war, export trade in petroleum products was badly demoralized and a severe readjustment to a peace basis was necessary. The drop in shipments in 1919 resulted. In 1920, the possibility of an oil shortage carried prices for crude oil to the highest level in recent history, and foreign purchasing was resumed on a large scale, while impetus was furnished for widespread activity in drilling work in America and in many foreign countries.

The jump in the rate of exports in 1923 and in 1924 reflects a condition of overproduction in the United States caused by the bringing in of several great oil pools in the Mid-Continent and in California in those years. The low price and quantity supply stimulated foreign buying.

As stated, the most important factor affecting consumption of gasoline in European countries is the growth of automobile use, in part stimulated by the export drive being made by American car manufacturers. Total European consumption of gasoline amounts to a little less than 17 per cent of the consumption in the United States, according to the latest figures.

At the end of 1925 there were 19,954,000 motor vehicles registered in the United States. Total world registration, according to the United States Bureau of Foreign and Domestic Commerce, was 24,565,000 cars, indicating only 19 per cent owned in foreign countries.

The United States has one motor vehicle to every 5.7 persons. In contrast the United Kingdom, with 903,000 cars, has one for every 49 persons. France has one for every 54 persons.

The enormous possibilities respecting increased gasoline demand not only in European countries but in Latin America, as financial conditions improve and as projected road improvements are made, are recognized, and in view of the first six months' showing in exports are taking tangible form.

There are definite economic limitations as to the rate that the American industry can supply the gasoline requirements of the world, but until foreign sources of supply are further developed, and, particularly until foreign refining facilities are largely augmented, demand from abroad for American manufactured gasoline will undoubtedly continue to increase.

NORTH CENTRAL TEXAS

(Continued from Page 39)

bbls. the next day and 240 bbls. on the eighteenth. The depth is 2,168-85 feet. No. 11 Burleson bailed 10 bbls. of salt water at 2,250 feet without exhausting and is being plugged back to 2,210 feet to shoot. Top of pay is 2,190 feet. It swabbed 120 bbls. in 10 hours on August 14, 50 bbls. obls. on August 17 and 145 bbls. on August 18.

Roxana Petroleum Corp.'s No. 1 Estep pumped 211 bbls. at 2,207-50 feet. Sun Oil Co.'s No. 1 Burleson was shot at 2,142-67 feet after plugging back to 2,160 feet it made 30 bbls. of oil and some salt water. The Texas Company's No. 3 King flowed 400 bbls. the first 18 hours at 2,045-56 feet and flowed 730 bbls. the next 24 hours on August 17. It flowed and swabbed 893 bbls. during the 24 hours ending at 7 a. m. August 18 and 850 bbls. the next day.

North Central Texas Completions

Archer County

Continental Oil Co.'s No. 9 Rogers pumped 20 bbls. at 1,360-72 feet. Gates and others' No. 6 Thomas pumped 50 bbls. at 1,148-67 feet. T. H. Jones' No. 1 Turbeville pumped 25 bbls. at 1,012-17 feet. Kell & Kruger's No. 4 Prideaux swabbed 100 bbls. in six hours at 693-709 feet and was being put on the pump. King & Looney's No. 2 Slopansky was dry and abandoned at 1,160 feet. Kruger and others abandoned the location for their No. 1 Deitrich. M. & V. Oil Co.'s No. 9 Kunkel pumped 7 bbls. at 1,173-76 feet. Magnolia Petroleum Co.'s No. 1 Hudson junked the hole at 1,023 feet and was abandoned. Marland Oil Co.'s No. 2 Thomas pumped 25 bbls. at 1,175-82 feet. Murchison & Fain's No. 2 Logan-B pumped 44 bbls. at 1,111-29 feet. Pandem Oil Corp.'s No. 6 Thomas pumped 35 bbls. at 1,157-65 feet. Plains Production Co.'s No. 1 Turbeville was dry and abandoned at 1,611 feet, having missed the sand. Roxana Petroleum Corp.'s No. 3 Abercrombie pumped 50 bbls. at 1,335-54 feet. Shaw & Rathke's No. 2 Abercrombie-A pumped 10 bbls. at 658-68 feet. Tidal Oil Co.'s location for No. 1 Farmer was abandoned.

Atlantic Oil Producing Co.'s No. 5 Oldham swabbed 65 bbls. at 1,060-71 feet. Cook & Reeder's No. 1 Browning & Co. was a failure at 1,704 feet. Gates and others' No. 5 Thomas pumped 70 bbls. at 1,152-65 feet. Lewis Oil Corp.'s No. 5 Prideaux pumped 10 bbls. at 631-38 feet; No. 6 Prideaux was dry and plugged at 750 feet. Maer & Staniforth's No. 1 Deskin was dry and abandoned at 900 feet. Magnolia Petroleum Co.'s No. 7 Little and others pumped 25 bbls. at 1,273-78 feet. Phillips Petroleum Co.'s No. 1 Williams was a failure at 1,010 feet and so was Pitts and others' No. 1 Prideaux at 425 feet. Reed & Wooten's No. 1 Baggett made 5 bbls. at 686-703 feet, total depth 722 feet.

Brown County

Amerada Petroleum Corp.'s No. 1 Fry made 35 bbls. and some water at 1,331-35 feet. Choate and others abandoned the location for their No. 1 Kennedy. Curry & Moore's No. 2 Kilgore Brothers was shot with 40 quarts at 1,288-96 feet, total depth 1,312 feet, and made 10 bbls. estimated; No. 2 Wooldridge was also shot with 40 quarts at 1,205-33 feet, total depth 1,235 feet and pumped 188 bbls. Dozier and others' No. 1 Cason topped the pay at 1,520 feet and made 97 bbls. the first 24 hours. Gibson Oil Corp.'s No. 1 White was estimated good for 50 bbls. at 1,226-36 feet, total depth 1,359 feet. Gunn Production Co.'s No. 8 Gunn made 35 bbls. at 1,190-1,210 feet. Humble Oil & Refining Co.'s No. 1 Armstrong was dry and abandoned at 1,565 feet; No. 1 Fry made 73 bbls. the first 12 hours at 1,307-10 feet; No. 7-B E. P. and W. H. Kilgore was shot with 20 quarts at 1,165-85 feet and made 100 bbls.; No. 9-B, previously reported location abandoned, was drilling at 500 feet; No. 11-B shot with 10 quarts and made 75 bbls. at 1,160-65 feet; No. 5-C made 20 bbls. at 1,178-80 feet; No. 5-D made 40 bbls. at 1,159-74 feet.

William Lester's No. 2 Fry made 150 bbls. of oil and 10 bbls. of water at 1,321-23 feet. McLester Oil Co.'s No. 6 Josie Wooldridge made 15 bbls. at 1,255-68 feet, total depth 1,269 feet. McMan Oil & Gas Co.'s No. 1 Gaines topped the sand and found a show of gas at 1,324 feet. Mendenhall and others' No. 12 Newton was dry and plugged at 1,271 feet. The Texas Company abandoned the location for No. 16 Dunn. The same company's No. 1 Hickman was completed for 400 bbls. at 1,178-86 feet. Troutt and others' No. 1 Roe was dry and abandoned at 1,004 feet. Valley Oil Co.'s No. 3 Teston was dry and plugged at 1,360 feet. Barnsdall Oil Corp.'s No. 1 Sparks was a failure at 1,350 feet.

Callahan County

Amerada Petroleum Corp.'s No. 3 Long made 50 bbls. at 1,380-96 feet, total depth 1,398 feet. Bradstreet and others No. 1 Sawyer swabbed 5 bbls. before a shot of 40 quarts at 1,723-37 feet, total depth 1,739 feet. Brown & Co.'s No. 2 Long was estimated at 40 bbls. in sand at 1,395-1,410 feet. Prairie Oil & Gas Co.'s No. 4 Cunningham made 75 bbls. at 1,388-1,404 feet, total depth 1,406 feet; No. 5 Cunningham made 100 bbls. at 1,386-1,406 feet. Wilson's No. 1 Bamm made 90 bbls. at 1,407-19 feet.

Baylor County

Bridwell & Heydrick's No. 1 Portwood was dry and abandoned at 1,467 feet.

Coleman County

McChesney's No. 1 Lowe was dry and abandoned at 1,602 feet. Midwest Exploration Co.'s No. 5-A Dibrell was shot with 40 quarts at 1,940-46 feet without results and was abandoned at 1,946 feet. Schermerhorn and others' No. 1 Gray had about 5,000,000 feet of gas in sandy lime at 1,060-80 feet.

Eastland County

Hart Brothers' No. 1 Davenport was abandoned at 1,712 feet with a hole full of water. It had a showing of gas at 1,674-84 feet. Humble Oil & Refining Co.'s No. 2 Parsons was dry and plugged at 1,640 feet; No. 3 was dry at 1,568 feet; No. 4 was shut down for orders at 1,235 feet; No. 5 was a failure at 1,554 feet; No. 6 was shut down for orders at 1,445 feet.

Mid-Kansas Oil & Gas Co.'s No. 1 Farmers State Bank had a showing of oil and gas at 2,705-30 feet but was drilling ahead at 2,788 feet. Smith and others' No. 2 Wright was abandoned as a failure at 1,506 feet. The Texas Company's No. 1 Wright had a show of oil and a bailer of water an hour at 1,627 feet in sand topped at 1,625 feet.

Hardeman County

Staley, Wynne and others' No. 1 Evans was dry and abandoned at 3,207 feet.

Jack County

McElreath, Suggett & Phillips' No. 1 Hoefel was dry and abandoned at 804 feet.

Baytex Oil Co.'s No. 1 Bowen was dry and abandoned at 786 feet; No. 1 Patton was also plugged at 1,002 feet. Crabb, McNeil and others' No. 1 Gillespie was another failure at 475 feet, and Oldham and others' No. 2 Hanna was dry at 380 feet.

Palo Pinto County

Moore & Snebold's No. 3 Robinson was a failure and plugged at 1,540 feet.

Shackelford County

Derby Oil Co.'s No. 1 Moberly, previously reported as a location abandoned, was drilling at 1,000 feet. Domestic Oil Co.'s No. 1 Colbert was plugged at 2,012 feet. Heck and others' No. 3 Reynolds was also dry at 1,310 feet. Hughes and others' No. 1 Diller Brothers was shut down for rig repairs at 830 feet, after getting a showing of oil at 815-20 feet. Morton's No. 1 Davis pumped 25 bbls. at 1,439-42 feet, total depth 1,444 feet. Robert Oil Corp.'s No. 1 Matthews had a showing of oil at 610-25 feet and 1,000,000 feet of gas at 690 feet and was drilling ahead at 700 feet. Roeser & Pendleton and Marland Oil Co.'s No. 17-A-84 Cook flowed 100 bbls. at 1,380-93 feet; No. 7-A-85 was dry and abandoned at 1,947 feet. Roeser & Pendleton's No. 7-B-84 made 800 bbls. at 1,275-92 feet; No. 8-B-84 pumped 150 bbls. at 1,310-32 feet; No. 10-B-85 pumped only 15 bbls. at 1,200-15 feet, after plugging back from 1,363 feet; No. 13-B-85 also pumped 15 bbls. at 1,187-1,202 feet after plugging back to 1,210 feet from 1,307 feet; No. 16-B-85 pumped 60 bbls. at 1,224-42 feet.

Stephens County

Mid-Kansas Oil & Gas Co.'s No. 18 J. W. Hill was shot with 40 quarts at 3,255-80 feet and made 48 bbls. Humble Oil & Refining Co.'s No. 1 Stanford was dry and abandoned at 3,389 feet.

Throckmorton County

Reiter-Foster Oil Corp.'s No. 3 Parrott swabbed 105 bbls. from the lime pay at 3,930-66 feet and was to set packer.

Wichita Completions

Humble Oil & Refining Co.'s No. 14 Lindsey was dry and abandoned at 2,060 feet. Magnolia Petroleum Co.'s No. 130 H. Reilly pumped 103 bbls. the first 24

hours at 1,377-82 feet. Proctor Oil Co.'s No. 1 L. W. Proctor had 100 feet of oil in the hole with no water from oil sand at 1,827-40 feet and was standardizing. Stump & Co. and others' No. 2 Chilson, Block 12, pumped 45 bbls. from sand at 1,164-78 feet.

Camp Oil & Gas Co.'s No. 1 Overall was dry and plugged at 1,969 feet. Culberson company's No. 41 Waggoner pumped 40 bbls. at 1,438-45 feet after plugging back from 1,454 feet; No. 42 pumped 35 bbls. at 1,438-42 feet. Easton and others' No. 1 Burnett was dry and abandoned at 2,002 feet.

Empire Gas & Fuel Co.'s No. 19 Pierce pumped one-half bbl. oil and same amount of water at 1,535-43 feet so will drill deeper. Hunter's No. 11 Waggoner Brothers pumped 3 bbls. at 833-40 feet; No. 12 pumped 15 bbls. at 1,416-42 feet; No. 13 made 30 bbls. at 1,420½-37½ feet; No. 14 pumped 22 bbls. at 1,424-39 feet; No. 15 pumped 25 bbls. at 1,426-35 feet; No. 16 pumped 40 bbls. at 1,426-41 feet.

Kimmell & Dillard's No. 1 Fassett & Tuttle swabbed 95 bbls. in 10 hours at 1,355-60 feet and was cleaning out. Magnolia Petroleum Co.'s No. 71 Honaker made 10 bbls. in 13 hours at 1,940-49 feet; No. 11 McDannald Douglas was dry and abandoned at 2,260 feet. McDannald and others' No. 1 Griffin, dry and plugged at 2,004 feet; Pace Drilling Co.'s No. 5 Edgerly-A, junked and abandoned at 1,937 feet. Red River Oil Co.'s No. 80 Bywaters was drilled deeper and recompleted for 142 bbls. on the pump from sand at 1,931-45 feet. It had very little water with the oil. Ross and others' No. 14 Mitchell pumped 20 bbls. at 1,878-80 feet. Rubsam, Hunter and others' No. 1 Eads was dry and plugged at 1,460 feet. Rubsam & Hunter's No. 1 McClure-C pumped 10 bbls. at 820-45 feet. Texhoma Oil & Refining Co.'s No. 1 Fisher was a failure at 2,000 feet.

Simms Oil Co.'s No. 4 Dutton pumped 45 bbls. at 1,157½-78½ feet. Dale Oil Corp.'s No. 25 Jennings was junked and abandoned at 1,802 feet. Electra Gulf Oil Co.'s No. 9 Murrey pumped 20 bbls. at 784-89 feet; No. 10 was dry and abandoned at 1,267 feet. Evangeline Petroleum Co.'s No. 1 Goetze was also a failure at 2,004 feet. Hawkins, Hester and others' No. 1 Marshall as plugged as dry at 1,844 feet.

O'Neil's No. 1 Harrison pumped 20 bbls. after shot at 1,823-55 feet. Petroleum Investment Co.'s No. 2 Fisher pumped 35 bbls. after drilling deeper from 1,461 feet to sand at 1,567-74 feet. Ridgeway's No. 6 Powell pumped 5 bbls. at 832-38 feet. Ryan Petroleum Co.'s No. 78 Nance pumped 30 bbls. of oil and 6 bbls. of water at 1,290-1,323 feet.

Wilbarger County

Bridwell, Heydrick and others' No. 1 Waggoner was dry and abandoned at 2,525 feet. Burton's No. 1 Waggoner was temporarily abandoned after spudding. Empire Gas & Fuel Co.'s No. 47 Stephens pumped 15 bbls. at 857-70 feet. Humble Oil & Refining Co.'s No. 15 Bond-B pumped an estimated 15 bbls. at 1,259-87 feet, total depth 1,288 feet; No. 24 Castlebury swabbed 74 bbls. in 18 hours while cleaning out at 2,146-50 feet; No. 12 Stephens pumped estimated 18 bbls. at 1,365-91 feet, total depth 1,393 feet; No. 14 Waggoner-H pumped 16 bbls. at 2,356-76 feet, total depth 2,380 feet. No. 8 Waggoner-K pumped 100 bbls. at 1,868-88 feet, total depth 1,889 feet; No. 9 flowed 27 bbls. in 10 hours at 1,868-81 feet; No. 10 pumped 28 bbls. estimated at 1,869-85 feet; No. 7 Waggoner-M had oil sand at 2,322-40 feet and was standardizing; No. 11 swabbed 51 bbls. in 12 hours at 2,352-62 feet; No. 5 Waggoner-N had lime at 2,316-62 feet and was cleaning out at 2,363 feet; No. 2 Waggoner-P had a showing of oil at 1,947-49 feet and was cementing.

Magnolia Petroleum Co.'s No. 54 Sumner pumped 9 bbls. at 1,718-23 feet in oil sand. Milham Corp's No. 1 Waggoner-J was dry and abandoned at 2,990 feet; No. 15 Waggoner-L swabbed 315 bbls. at 1,892-96 feet and 1,924-36 feet. Miller Oil Co.'s No. 2 Waggoner was dry and plugged at 2,440 feet. Phillips Petroleum Co.'s No. 4 Waggoner-T pumped 30 bbls. at 2,296-2,345 feet, total depth 2,363 feet; No. 7 Waggoner-T pumped 60 bbls. at 1,874-84 feet, total depth 1,903 feet; No. 3 Waggoner-HH swabbed 130 bbls. at 2,544-55 feet, total depth 2,570 feet; No. 2 Waggoner-UU pumped 25 bbls. at 1,871-80 and 1,907-25 feet; No. 3 pumped 230 bbls. at 1,908-26 feet; No. 4 pumped 225 bbls. at 1,938-52 feet; No. 3 Waggoner-WW pumped 200 bbls. at 1,896-1,908 and 1,927-48 feet. Prairie Oil & Gas Co.'s No. 5 Waggoner-A swabbed 60 bbls. from lime at 2,274-89 and sand at 2,289-91 feet and was cleaning out at 2,320 feet.

Rio Bravo Oil Co.'s No. 1 Section 19 had a small showing of oil at 1,976-82 feet but it tested salt water and the well was drilling ahead at 2,170 feet. Rondeu's No. 1 Waggoner-B was a duster and plugged at 2,203 feet. Tidal Oil Corp.'s No. 1 Waggoner, Lease 3, was dry and abandoned at 2,357 feet. Waggoner Refining Co.'s No. 4 Waggoner-A pumped 100 bbls. at 1,921-38 feet.

Empire Gas & Fuel Co.'s No. 5 Richardson pumped 15 bbls. at 1,397-1,420 feet after it was deepened from 1,336 feet; No. 37 Stephens was dry and abandoned at 2,315 feet; No. 42 Stephens pumped 57½ bbls. of oil and 17½ bbls. of water at 2,271-83 feet, total depth 2,340 feet; No. 43 made 53 bbls. at 2,326-39 feet; Humble Oil & Refining Co.'s No. 5 Waggoner-I pumped 8 bbls. at 1,888-98 feet; No. 7 Waggoner-K pumped 100 bbls. at 1,874-91 feet. Milham Corp.'s No. 9 Waggoner-L pumped 162 bbls. at 1,894-1,900 feet, total depth 1,918 feet. Phillips Petroleum Co.'s No. 3 Waggoner-A pumped 150 bbls. at 1,837½-71 feet, total depth 1,873 feet; No. 4 Waggoner-I made 7 bbls. after a shot at 1,850½-59 feet, total depth 1,874 feet; No. 1 Waggoner-BB was drilled deeper from 2,297 feet and pumped 23 bbls. at 2,277-80 and 2,306-14 feet, total depth 2,366 feet. Roxana Petroleum Corp.'s No. 1 Condon was dry and abandoned at 1,271 feet; No. 1 Waggoner-D pumped 30 bbls. at 2,297-2,310 feet, total depth 2,360 feet.

Young County

Atlantic Oil Producing Co.'s No. 8 Rachuig-B flowed and swabbed 350 bbls. at 1,159-62 feet. Burton and Texhoma Oil & Refining Co.'s No. 4 Benson pumped 20 bbls. at 935-50 feet. J. W. Collier's No. 1 fee had oil sand at 578-81 feet and was being put on the pump. Madden and others' No. 3 Benson pumped 15 bbls. at 900-18 feet. No. 4 Benson made 8 bbls. on the pump at 900-20 feet. McElreath, Suggett & Phillips' No. 3 Snyder was dry and abandoned at 804 feet. J. J. Moran's No. 2 Stewart had a hole full of oil at 802-20 feet and was being put on the pump; No. 3 Stewart pumped 80 bbls. at 792-807 feet. Nash & Windfohr's No. 2 Watson was dry and abandoned at 650 feet. Riggs and others' No. 2 Jones made 5 bbls. at 505-12 feet. Roberts Oil Corp.'s No. 11 Rogers was put on the pump at 806-64 feet. Ruff and others' No. 1 Stewart made 130 bbls. initially at 797-815 feet. Simms Oil Co.'s No. 1 Routon was estimated good for 25 to 40 bbls. at 866-69 feet and was being put on the pump. Simms Oil Co., Cosden and Consolidated Oil Co.'s No. 2 Greeg was dry and plugged at 802 feet. It had dry sand at 563-68 feet. The Texas Company's No. 1 Stewart made 42 bbls. at 785-805 feet. Tidal Oil Co. and others' No. 5 Benson-A pumped 20 bbls. at 907-40 feet; No. 7 Benson-A pumped 25 bbls. at 921-38 feet; No. 8 was cleaning out to shoot at 889-926 feet.

Appleby and others' No. 1 Stewart was dry and abandoned at 743 feet. Bridwell & Heydrick's No. 9 Beardon pumped 75 bbls. at 1,074-88 feet. Bridwell & Mayfield's No. 2 Williams was abandoned at 60 feet. Camp Oil & Gas Co.'s No. 1 Nall was a duster at 1,000 feet. Cosden and Consolidated Oil Co.'s No. 1 Benson-B was also plugged at 1,000 feet. Jeffers & Jeffers' No. 2 Leberman was dry at 1,004 feet. A. W. Johnson's No. 1 Benson was plugged at 1,204 feet. Madden and others' No. 2 Benson pumped 45 bbls. at 900-22 feet, total depth 1 foot deeper. Pandem Oil Corp.'s No. 5 Whitehead pumped 40 bbls. at 861-69 feet. Reed and others' No. 4 Jack pumped 12 bbls. at 540-46 feet. Reed and Anderson's No. 3 Gragg was dry and plugged at 995 feet. Roberts Oil Corp.'s No. 10 Rogers pumped 60 bbls. at 863-75 feet. Ryan and others' No. 1 Calvin was dry and abandoned at 600 feet. Stafford & Hayes' No. 5 Dailey pumped 10 bbls. initially from sand at 551-69 feet. Sun Oil Co.'s No. 11 Deitrich was a failure at 1,247 feet. The Texas Company's No. 14 Beardon swabbed 175 bbls. at 1,056-85 feet. Webster and others' No. 1 Brainard was dry and abandoned at 907 feet.

PRODUCTION BY FIELDS FOR WEEK ENDING AUGUST 20

Electra

Atlantic Oil Producing Co.	55
Empire Gas & Fuel Co.	682
Gulf Production Co.	937
Humble Oil & Refining Co.	146
Magnolia Petroleum Co.	3,267
Panhandle Refining Co.	43
Phillips Petroleum Co.	12
Prairie Oil & Gas Co.	103
Rio Bravo Oil Co.	514
The Texas Company	3,424
Texhoma Oil Refining Co.	1,229
Miscellaneous	5,425
Total	15,837

Burkburnett

Gulf Production Co.	439
Humble Oil & Refining Co.	447
Magnolia Petroleum Co.	2,549
Panhandle Refining Co.	224
Prairie Oil & Gas Co.	24
Simms Oil Co.	13
Sinclair Oil & Gas Co.	46
Skelly Oil Co.	173
The Sun Oil Co.	47
The Texas Company	383
Texhoma Oil & Refining Co.	527
Miscellaneous	7,255
Total	12,126

Iowa Park

Atlantic Oil Producing Co.	58
Gulf Production Co.	114
Humble Oil & Refining Co.	131
Magnolia Petroleum Co.	320
Panhandle Refining Co.	36
Roxana Petroleum Corp.	7
Simms Oil Co.	77
The Texas Company	180
Texhoma Oil & Refining Co.	611
Miscellaneous	2,680
Total	4,214

Wilbarger

Atlantic Oil Producing Co.	55
Empire Gas & Fuel Co.	902
Gulf Production Co.	55
Humble Oil & Refining Co.	2,676
Phillips Petroleum Co.	5,882
Prairie Oil & Gas Co.	157
Roxana Petroleum Corp.	395
The Texas Company	27
Texhoma Oil & Refining Co.	81
Tidal Oil Co.	10
Miscellaneous	3,980
Total	14,230

Archer

Atlantic Oil Producing Co.	218
Barnsdall Oil Co.	795
Cosden Co.	372
Empire Gas & Fuel Co.	510
Gulf Production Co.	2,437
Humble Oil & Refining Co.	1,237
Independent Oil & Gas Co.	7
Magnolia Petroleum Co.	1,539
Marland Oil Co.	638
Panhandle Refining Co.	134
Phillips Petroleum Co.	570
Prairie Oil & Gas Co.	1,896
Roxana Petroleum Corp.	291
Simms Oil Co.	723
Sun Oil Co.	276
The Texas Company	3,145
Texhoma Oil & Refining Co.	2,842
Tidal Oil Co.	36
Miscellaneous	11,975
Total	29,641

Young

Atlantic Oil Producing Co.	456
J. S. Cosden	238
Gulf Production Co.	213
Humble Oil & Refining Co.	274
Magnolia Petroleum Co.	141
Marland Oil Co.	2
Mid-Kansas Oil & Gas Co.	13
Panhandle Refining Co.	134
Phillips Petroleum Co.	25
Prairie Oil & Gas Co.	8
Roxana Petroleum Corp.	135
Simms Oil Co.	592
Sinclair Oil & Gas Co.	348
Sun Oil Co.	330
The Texas Company	366
Texhoma Oil & Refining Co.	361
Tidal Oil Co.	84
Miscellaneous	4,509
Total	8,220

Stephens

Arkansas Fuel Oil Co.	25
Empire Gas & Fuel Co.	25
Gulf Production Co.	1,163
Humble Oil & Refining Co.	635
Magnolia Petroleum Co.	350
Mid-Kansas Oil & Gas Co.	1,465
Phillips Petroleum Co.	350
Prairie Oil & Gas Co.	765
Republic Production Co.	135
Roxana Petroleum Co.	50
Simms Oil Co.	30
Sinclair Oil & Gas Co.	75
Sun Oil Co.	160
The Texas Company	930
Texas Pacific Coal & Oil Co.	1,120
Miscellaneous	4,260
Total	11,538

Shackelford

Amerada Petroleum Corp.	5
Empire Gas & Fuel Co.	20
Humble Oil & Refining Co.	1,495
Independent Oil & Gas Co.	15
Magnolia Petroleum Co.	60
Phillips Petroleum Co.	575
Prairie Oil & Gas Co.	12
The Texas Company	175
Texhoma Oil & Refining Co.	75
Miscellaneous	8,690
Total	11,122

Ranger

Arkansas Fuel Oil Co.	5
Gulf Production Co.	682
Humble Oil & Refining Co.	45
Magnolia Petroleum Co.	550
Mid-Kansas Oil & Gas Co.	105
Panhandle Refining Co.	125
Phillips Petroleum Co.	15
Prairie Oil & Gas Co.	540
Republic Production Co.	46
Simms Oil Co.	25
Sinclair Oil & Gas Co.	275
The Texas Company	155
Texas Pacific Coal & Oil Co.	815
Transcontinental Oil Co.	30
Miscellaneous	2,360
Total	5,767

Eastland-Comanche

Empire Gas & Fuel Co.	5
Humble Oil & Refining Co.	85
Magnolia Petroleum Co.	575
Mid-Kansas Oil & Gas Co.	145
Phillips Petroleum Co.	35
Prairie Oil & Gas Co.	160
Sinclair Oil & Gas Co.	15
Skelly Oil Co.	125
The Texas Company	165
Transcontinental Oil Co.	20
Miscellaneous	670
Total	1,880

Brown

Cosden Co.	525
Humble Oil & Refining Co.	3,725
Phillips Petroleum Co.	160
Prairie Oil & Gas Co.	550
Simms Oil Co.	25
The Texas Company	465
Witherspoon Oil Co.	20
Miscellaneous	5,965
Total	11,435

Callahan

Amerada Petroleum Corp.	150
Humble Oil & Refining Co.	3
Prairie Oil & Gas Co.	767
The Texas Company	110
Texas Pacific Coal & Oil Co.	25
Miscellaneous	3,575
Total	4,628

Miscellaneous Pools

Reagan County	27,614
Clay County	555
Montague County	5,611
Jack County	529
Throckmorton County	2,572
Baylor County	195
Palo Pinto County	456
Coleman County	1,920
Scurry County	48
Mitchell County	3,506
Crockett County	1,049
Upton County	4,336
Total	48,091
Grand total	179,258

Panhandle

Carson County	5,664
Hutchinson County	85,625
Wheeler County	265
Gray County	3,595
Total	95,149
Grand total	274,407

BURBANK LEASES IN NEXT OSAGE SALE

(Continued from Page 31)

45	SW	36-21-10	160
46	NW	7-22-10	160
47	NE	7-23-10	160
48	SE	7-23-10	160
49	NE	11-23-10	160
50	SW	13-23-10	160
51	SE	31-23-10	160
52	NE	33-23-10	160
53	SE	33-23-10	160
54	SE	21-24-10	160
55	SW	32-24-10	160
56	NE	11-25-10	160
57	NW	12-25-10	160
58	NE	20-27-10	160
59	SW	20-27-10	160
60	SW	2-20- 9	160
61	NE	16-21- 9	160
62	SE	28-21- 9	160
63	SE	10-22- 9	160
64	SW	10-22- 9	160
65	NE	12-22- 9	160
66	NW	23-22- 9	160
67	SE	26-22- 9	160
68	SE	27-22- 9	160
69	NW	34-23- 9	160
70	NW	35-23- 9	160
71	SW	17-25- 9	160
72	NE	19-25- 9	160
73	NW	20-25- 9	160
74	SE	27-25- 9	160
75	NE	30-25- 9	160
76	NW	33-25- 9	160
77	NE	34-25-9	160
78	NE	7-27- 9	160
79	NW	8-27- 9	160
80	SW	8-27- 9	160
81	NW	15-27- 9	160
82	NE	16-27-9	160
83	NE	23-27- 9	160
84	NW	23-27- 9	160
85	NW	35-27- 9	160
86	NW	12-28- 9	160
87	NE	21-28- 9	160
88	SE	30-28- 9	160
89	NE	31-28- 9	160
90	NE	35-28- 9	160
91	SW	36-28- 9	160
92	SE	14-21- 8	160
93	SW	14-21- 8	160
94	NE	15-21- 8	160
95	SE	3-24- 8	160
96	SW	3-24- 8	160
97	NW	11-24- 8	160
98	NW	13-24- 8	160
99	NE	18-24- 8	160
100	NW	18-24- 8	160
101	SW	20-24-8	160

102	NE	5-25- 8	160
103	NW	5-25- 8	160
104	NW	9-25- 8	160
105	NW	12-25- 8	160
106	NW	26-25- 8	160
107	NE	27-25- 8	160
108	SE	32-25- 8	160
109	SW	33-25- 8	160
110	NE	9-26- 8	160
111	NW	9-26- 8	160
112	SE	13-26-8	160
113	SW	15-26- 8	160
114	SE	25-26- 8	160
115	NE	27-26- 8	160
116	NW	27-26- 8	160
117	NW	36-26- 8	160
118	NE	2-27- 8	160
119	SE	2-27- 8	160
120	NE	15-27- 8	160
121	NW	15-27- 8	160
122	SE	23-27- 8	160
123	SE	25-27- 8	160
124	SE	32-27- 8	160
125	SW	32-27- 8	160
126	NE	30-28- 8	160
127	SE	30-28- 8	160
Total			20,320

West of Range 8

128	Fr.	N½ 33-22-7	113.80
129	SE	33-22-7	160
130	Fr.	SW 33-22-7	106.92
131	NW	15-25-7	160
132	SE	24-23-7	160
133	NE	22-25-7	160
134	NW	22-25-7	160
135	SE	22-25-7	160
136	SW	22-25-7	160
137	NE	35-25-7	160
138	NW	35-25-7	160
139	SE	35-25-7	160
140	SW	35-25-7	160
141	NE	24-26-7	160
142	NW	24-26-7	160
143	SE	24-26-7	160
144	SW	24-26-7	160
145	NW	29-26-7	160
146	NE	30-26-7	160
147	SE	30-26-7	160
148	SE	22-27-7	160
149	SW	22-27-7	160
150	NE	27-27-7	160
151	NW	27-27-7	160
152	SE	15-28-7	160
153	SW	15-28-7	160
154	NE	22-28-7	160
155	NW	22-28-7	160
156	NE	13-23-6	160
157	NW	13-23-6	160
158	SE	13-23-6	160
159	SW	13-23-6	160
160	NE	21-23-6	160
161	NW	21-23-6	160
162	SE	21-23-6	160
163	SW	21-23.6	160
164	NE	4-24-6	160
165	NW	4-24-6	160
166	SE	4-24-6	160
167	SW	4-24-6	160
168	NE	19-25-6	160
169	NW	19-25-6	160
170	SE	19-25-6	160
171	SW	19-25-6	160
172	NE	21-25-6	160
173	NW	22-25.6	160
174	SW	22-25-6	160
175	NW	27-25-6	160
176	NW	20-26-6	160
177	SW	20-26-6	160
178	SW	22-26-6	160
179	NE	28-26.6	160
180	NW	28-26-6	160
181	NE	29-26-6	160
182	NE	7-27-6	160
183	NW	7-27-6	160
184	NW	13-27-6	160
185	SE	13-27-6	160
186	SE	4-28-6	160
187	SW	4-28-6	160
188	NE	9-28-6	160
189	NW	9-28-6	160
190	NE	5-25-5	160
191	NW	5-25-5	160
192	SE	5-25-5	160
193	SW	5-25.5	160
194	NW	1-27-5	160
195	SE	1-27-5	160
196	NE	13-28-5	160
197	NW	13-28-5	160
198	SE	13-28-5	160
199	SW	13-28.5	160
200	NE	9-23-4	160
201	NW	9-23-4	160
202	SE	9-23-4	160
203	SW	9-23-4	160
204	NE	1-24-4	160
205	NW	1-24-4	160
206	SE	1-24-4	160
207	SW	1-24-4	160
208	NE	23-25-4	160
209	NW	23.25-4	160
210	SE	23-25-4	160
211	SW	23-25-4	160
212	NE	32-25-4	160
213	NW	32-25.4	160
214	SE	32-25-4	160
215	SW	32-25-4	160
216	NE	26-26-4	160
217	NW	26-26-4	160
218	SE	26-26-4	160
219	SW	26-26-4	160
220	NE	31-26-4	160
221	NW	31-26-4	160
222	SE	31-26-4	160
223	SW	31-26-4	160
Total			15,260.72

TEXAS PANHANDLE

(Continued from Page 40)

completed, was flowing 50 bbls. daily at 2,687-2,726 feet.

Phillips Petroleum Co. and Pulaski Oil Co.'s No. 2 Smith, Section 12, Block Y, flowed 600 bbls. after a 100-quart shot at 2,896-2,936 feet, total depth 2,949 feet; No. 3 Smith, same section, flowed 500 bbls. after a 100-quart shot at 2,686-2,726 feet, total depth 2,732 feet. Prairie Oil & Gas Co.'s No. 10 Johnson-A, SE cor. Section 20, Block Y, made 100 bbls. after a shot of 120 quarts at 2,983-3,038 feet; No. 13 Johnson-A, NE cor. NW, Section 21, made 200 bbls. when shot with 100 quarts at 2,906-56 feet; No. 3 Maggie Weatherly, Section 23, Block Y, was flowing 60 bbls. daily at 2,975-3,038 feet. Skelly Oil Co.'s No. 1 Johnson, Section 20, Block Y, in the SE cor. NW, flowed 100 bbls. an hour at 2,950-85 feet; No. 4 in the NE cor. NW NW, same section, flowed 30 bbls. an hour at 2,928 feet in the top of the pay. Spring Creek Oil Co.'s No. 3 Smith in the NW SW of Section 5, Block Y, made 800 bbls. after a shot of 330 quarts at 2,650-2,753 feet. Westex Oil Co.'s No. 7 J. A. Whittenburg flowed 600 bbls. at 2,920-70 feet. This is in the NW cor. SE of Section 13, Block Y, White Eagle Oil & Refining Co.'s No. 1 J. A. Whittenburg in Section 12, Block Y, swabbed 500 bbls. at 2,880-2,925 feet.

New Carson County Wells.

Marland Oil Co.'s No. 1 Burnett-C, NE cor. Section 105, Block Y, flowed and swabbed 100 barrels, daily from granite wash at 3,167-85 feet.

PANHANDLE WILDCATS

Carson County.

Empire Gas & Fuel Co.'s No. 1 Burnett Estate, Section 127, Block 5, drilling 2,110 feet; Gibson Oil Corp.'s No. 1 Witter, Section 1, Block 7, temporarily abandoned at 1,015 feet; Humble Oil & Refining Co.'s No. 1 Burnett-A, Section 12, Block 4, rigged up and shut down; Prairie Oil & Gas Co.'s No. 1 Deahl, Section 5, Block 5, shut down at 1,500 feet; Roxana Petroleum Corp.'s No. 1 Bryan, Section 92, Block 4, drilling 2,310 feet; White Deer Oil Co.'s No. 1 Judson & Brown, Section 14, Block 4, fishing for tools at 2,860 feet.

Collingsworth County

Allmen and others' No. 1 McDowell, location; Gibson Oil Corp.'s No. 1 Williams and others, Section 5, Block 13, H. & G. N. Survey, drilling 210 feet; Martin and others' No. 1 Mrs. T. V. Norwood, Section 30, Block 16, building rig.

Dallam County.

James and others' No. 1 Fee, Section 9, Block 47½, drilling at 2,780 feet, set 6-inch at 2,775 feet.

Gray County.

Archer, Blake and others' No. 1 Turneau, Section 111, Block B-2, new location, rig on ground; Bay Shore Oil Co.'s No. 1 C. W. Bradford, Section 148, Block B-2, drilling at 2,300 feet; Blackwell & McGee's No. 1 Bowers, Section 92, Block B-2, rig up, awaiting gas; Canyon Oil Co.'s No. 1 Jackson Estate, Section 60, Block B-2, rig; Constantin and others' No. 1 Dial, Block 25, shut down at 2,000 feet; Cranfill Bros.'s No. 1 T. B. Noble, Section 10, Block A-6, drilling at 195 feet; Eagle Creek Oil Co.'s No. 1 Mrs. J. Hopkins, Section 66, Block B-2, spudded and shut down; H. B. Eller's No. 1 Crews, SE cor. Section 12, Block 25, rig on ground; Empire Gas & Fuel Co.'s No. 1 Benton, Section 64, Block 3, at 1,260 feet; No. 1 Hughey, Section 129, Block 3, drilling at 1,020 feet; No. 1 J. J. Hall, Section 161, Block 3, drilling 470 feet. Jack Greenwood and others' No. H. B. Lovett, Section 26, Block B-2, spudded and shut down for water; Haughan and others' No. 1 A. J. Daur, Section 237, Block B-2, cellar; Nabob Oil Co.'s No. 1 J. S. Morse, Section 68, Block 25, drilling at 1,700 feet; Pampa Oil Co.'s No. 1 W. R. Campbell, Section 90, Block 3, building rig; Shamrock Petroleum Co.'s No. 2 Merten, Section 82, Block 3, standardizing, 8¼-inch casing set at 2,438 feet; Roxana Petroleum Corp's No. 1 B. E. Finley, B. E. Chaney Survey, rig; Weir, Kribs & Finklea's No. 1 B. F. Talley, Section 114, Block M-2, rig; Travis and others' No. 1 J. Back, Section 44, Block 25, rig on ground; Young and others' No. 1-A Holmes, Section 106, Block 3, running 10-inch at 1,150 feet; Upham Gas Co.'s No. 1 W. E. Grammage, Section 4, Block 25, location.

Hansford County.

F. W. Dillard and others' No. 1 F. A. Davis, Section 50, Block 2, spudded and shut down.

Hartley County.

Cain Oil Co.'s No. 1 Coots, Section 52, Block XR, W. M. D. Lee Survey, location; Deep Rock Oil Co.'s No. 1 Lyman & Balfour, Section 9, Block 2, G. & M. Survey, shut down at 860 feet; Dorning and others' No. 1 A. C. Ashby, rigging up; Eslick and others' No. 1 J. B. Irving, Section 13, Block 13, C. S. & S. Survey, shut down for casing at 450 feet; W. W. Holmes' No. 1 G. B. Coots, Section 58, Block LR, Lee Survey, drilling 980 feet; Humble Oil & Refining Co.'s No. 1 J. M. Shelton, Section 63, drilling 500 feet; J. E. McKanna's No. 1 E. S. Collins, Section 3, Block LS, G. & M. Survey, rigging up; No. 1 E. H. Farwell and others, Section 10, Block 22, C. S. & S. Survey, rigging up; No. 1 J. M. Shelton Estate, Lot 29, League 202, rigging up; Kork Oil Co.'s (was Nutigate's) No. 1 J. M. Shelton Estate, Section 1, Block B S. rig; Breck Walker's No. 1 Stone, Section 35, Block ITO, T. & N. O. Survey, location.

Hemphill County.

Dorning and others' No. 1, Alexander, Poitevant Survey, new location, rig; Hoover and others' No. 1 Schaller Estate, Section 4, spudded and shut down; No. 1 Fee, J. S. Hood Survey, spudded 90 feet; Mitchell and others' No. 1 J. E. George, Section 40, Block A-2, drilling 400 feet.

Hutchinson County.

Anderson & Pritchard's No. 1 Yake, Section 1, Block J, H. & G. N. Survey, fishing at 733 feet; Big Creek Oil Co.'s No. 1 Cal Merchant, Section 37, Block 47, drilling 2,285 feet; 100,000 feet of gas at 2,080 feet; Brookins & Flowers' No. 1 Carver, Section 6, William Heath Survey, shut down at 825 feet.

Center Dome Oil Co.'s No. 2 J. Pritchard, Section 1, Block B-4, D. & S. E. Survey, shut down at 446 feet; Clark & Hagy's No. 1 Yake, Section 35, Block 47, drilling 840 feet; Get Oil Co.'s No. 1 W. F. Allen, Jose Rodriquez Survey, spudded and shut down; Gibson Oil Co.'s No. 1 McCormick Estate, Section 18, Block M-23, drilling 3,040 feet. Goldeline Oil Co.'s No. 2-A Whittenberg, Section 47, H. & T. C. Survey, moving boiler back and rebuilding rig, 2,804 feet; No. B 1 Whittenberg, Section 89, Block Z, drilling 1,790 feet; Gulf Production Co.'s No. 1 Christian, M. Anglin Survey, No. 1 J. T. Hodges, Section 5, Block M-26, T. C. R.R. Survey, No. 1-B. Sanford, Section 2, Block X03, H. & O. B. Survey, rigs; Harvey Oil Co.'s No. 1 Harvey, Section 33, Block M-21, shut down at 1,350; Inspiration Oil Co.'s No. 1 Thompson, Section 4, Block M-18, B. & P. Survey, shot lime 360 quarts at 3,028-3,105 feet; no results, shut down; Panfield Oil Co's No. 1 Luginbyhl Brothers, rig; Roxana Petroleum Corp.'s No. 1 Lee Bivins, Section 86, Block 46, cemented 8-inch at 2,520 feet; No. 1 M. Jasper, Section 6, Block M-26, T. C. R.R. Survey, drilling at 2,885 feet, show of oil at 2,860 feet; Sinclair Oil & Gas Co.'s No. 1 Williams, Section 43, Block 47, drilling 1,592 feet, 500,000 feet gas 1,468 feet; The Texas Company's No. 7 Burnett, Section 132, Block 5, I. & G. N. Survey, drilling granite wash 3,235 feet; Texo Oil Co.'s No. 1 Johnson, Section 1, Block 1, M. Tomlinson Survey, shut down; L. H. Wentz' No. 1 Cal Merchant, Section 34, Block 47, H. & T. C. Survey, drilling 2,100 feet; No. 1 Martha Reimer, Section 2-A, Block M-26, shut down at 2,986 feet, 5,000,000 gas at 2,705 feet; Western Development Co.'s No. 1 O. W. Jarvis, drilling at 2,210 feet.

Lipscomb County.

Snyder and others' No. 1 A. Barton, Section 504, Block 43, H & T. C. Survey, drilling 2,000 feet.

Moore County.

Amarillo Oil Co.'s No. 1 Masterson-J, Section 59, Block O 18, drilling at 1,200 feet; No. 2 Terry Thompson, Section 19, Block 44, shut down at 1,125 feet, drilling water well; Cadman and others' No. 1 J. T. Sneed, Jr., Section 68, Block 3, G. & M. Survey, drilling 1,825 feet; Shamrock Petroleum Co.'s (formerly Clark, Harbin & Baldridge) No. 1 O. E. Gober, Section 16, Block M-21, spudding 150 feet; Douglas Oil Co.'s No. 1 H. W. Beauchamp, Section 112, Block 44, H. & T. C. Survey, spudded; Lee Flowers and Marland Oil Co.'s No. 1 J. T. Sneed, Jr., Section 25, Block 1, J. Poitevent Survey, drilling 1,300 feet; Humble Oil & Refining Co.'s No. 1 Kilgore, Section 28, Block 44, H. & T. C. Survey, rigging up; Phillips Petroleum Co.'s No. 1 Sneed, N. Jones Survey, fishing at 3,040 feet; Masters Oil Co.'s No. 1 J. T. Sneed, Jr., rig; Morton & Co.'s No. 1 H. C. Rubert, Section 191, Block 3-T, spudded; Prairie Oil & Gas Co.'s No. 2 Sneed, Section 26, Block 6-T, drilling 2,110 feet; Moore County Oil Co.'s No. 1 Sneed, Block 6-T, spudding new hole, total depth old hole 1,390 feet; Sadler Brothers' No. 1 John Lowrey, Dumas Townsite, Section 237, Block 44, rig.

Ochiltree County.

W. G. Burton's No. 1 Stickler, Section 579, Block 43, shut down 1,650 feet; Hamilton and others' No. 1 R. E. Wamble, Section 144, Block 43, rigging up; McCorkle Pipe Line Co.'s (was Harris & Schaffer) No. 1 R. H. Moore, Section 471, Block 43, or 580 feet; Standard Development Co.'s No. 1 Bowden, Section 923, Block 43, shut down 670 feet.

Potter County.

Amarillo Oil Co.'s No. 5 Lee Bivins-A, Section 25, Block O-18, drilling 1,055 feet; No. 1 Fuqua, Section 4, rigging up; Farmers Oil & Gas Co.'s No. 1 J. A. Jones, rig. Gulf Production Co.'s No. 1 W. H. Bush, Section 89, Block 9; Kelly & Harris' No. 1 Bush, Section 161, Block 9, location.

Roberts County.

Gibson Oil Corp.'s No. 1 T. S. Jones, Section 109, Block C, fishing at 468 feet; Charles Page and others' No. 1 Hamilton, Tract 2, Clay County school land, rigging up; Pan-State Oil Co.'s No. 1 A. H. Tandy, Section 179, Block 42, rig; Pettijohn and others' No. 1 J. A. Meade, Section 29, Block B-1, rig; Trammel and others' No. 1 A. H. Tandy, school land, location.

Sherman County.

Eclipse Drilling Co.'s No. 1 Lee Bivins, Section 35, Block 2, drilling 280 feet; Get Oil Co.'s No. 1 Bivvins, Section 35, Block 3-B, rig; Phillips Petroleum Co. and Savoy Oil Co.'s (formerly Savoy Oil Co.) No. 1 Roach, Section 161, G. H. & H. Survey, shut down 315 feet.

Swisher County.

Overson & Keagan's No. 1 L. M. Woodward, shut down 840 feet.

Wheeler County.

Continental Oil Co.'s No. 1 W. C. Company, drilling at 1,700 feet; Gibson Oil Corp.'s No. 1 W. E. Bentley, Section 42, Block 24, shut down 2,240 feet, 250,000 feet of gas 2,160 feet; No. 2 H. C. Phillips, Section 41, Block 24, rig; Laycock and others' No. 1 fee, Section 10, Block 27, new location; Mid-Kansas Oil & Gas Co.'s No. 1 W. C. Company, Section 12, Block 27, underreaming 10-inch at 1,370 feet; Murchison & Fain's No. 1 Binkley & Cain, Section 55, Block 24, underreaming at 195 feet; No. 1 Binkley & Cain-A, Section 37, Block 24, drilling 1,312 feet; J. J. Rock Co.'s No. 1 T. C. Jones, new location; Scott & Barner's No. 1 J. H. Jackson, Section 11, Block 27, drilling 1,950 feet; Smith and others' No. 1 W. J. Johnson, Section 88, Block A-5, rig. Smith, Brady and others' No. 1 P. J. Sorenson, shut down at 312 feet; The Texas Company's No. 1 Smith, new location; Upham Gas Co.'s No. 1 Cody, Section 88, Block 17, shut down at 260 feet; No. 1 Martin, Section 89, Block 17, new location; No. 1 Alexander, new location; No. 1 Griswald, Section 1, Block 24, rig; No. 1 Newton, Section 22, Block 17, drilling 1,860 feet; E. L. Woodley, Jr.,'s No. 1 Woodley, Sr., Section 13, Block A-5, shut down 1,150 feet; Vaughn and others' No. 1 O'Gorman, Section 83, Block 17, new location.

Donley County.

A. T. Drilling Co.'s No. 1 F. E. Harrington, Section 39, Block C-3, drilling 180 feet.

Childress County.

Gibson Oil Corp. and others' No. 1 Smith, cleaning out at 1,600 feet to drill deeper, total depth 2,594 feet.

Keen Competition In California Lub And Gasoline Sales

LOS ANGELES, Calif., Aug. 20.—Local competition for gasoline and lubricating oil sales has become very much keener during the past week than heretofore. The reason for the increase in competitive conditions, which were believed to be already extreme, is the recent introduction of a second grade gasoline by the Standard Oil Co. of California to compete with so-called bootleg gasolines which have been sold in and around Los Angeles for some time. Local marketers interpret this step as the beginning of a campaign to eliminate cheap gasolines from the southern California market. It is hard at this time to predict just where the fight will lead, but it is rather generally admitted that if the large companies actually intend to drive the refiner of bootleg gasoline out of business, that they can do it.

The price situation locally is and has been unsatisfactory for some time. Cut rate gasolines are being bought more and more as time goes on and the various brands that have lasted for the past two years or so have established their names so that motorists actually specify the kind of cheap gasoline they wish when buying at independent service stations. This situation has made serious inroads in the sales of the larger companies who have been trying to steady prices at the level quoted for Red Crown by the Standard Oil Co. of California. Since this condition is purely local, existing only in the vicinity of Los Angeles, and throughout the balance of the State price conditions are relatively firm, the larger companies are only compelled to meet this so-called bootleg competition in southern California.

The industry in general will remain in a stronger position if the cut rate conditions existing locally can be met through the marketing of second grade gasoline rather than by the reduction of the price of gasoline throughout the Pacific Coast territory. Some marketers are looking forward to a reduction of this kind in the fall, but it is by no means a foregone conclusion at this time, as the market aside from Los Angeles is quite strong.

Richfield Gains Rapidly

Figures just released by the State and based on gasoline returns for the first half of 1926, show that the leading five distributors sold 332,633,984 gallons during this period as compared with 268,930,544 in 1925. This is an increase of approximately 17 per cent. The outstanding fact revealed by publication of gasoline sales in California for the first six months, is the rapid rate of increase in gasoline sales shown by the Richfield Oil Co., which jumped from fifth place to third among the California marketing companies during this period. During the past two and a half years, this company has more than quadrupled its gasoline sales. The companies in the order of taxes paid on gasoline sold show the Standard Oil Co. of California as first, Shell Co. of California second, Richfield Oil Co. third, and Union Oil Co. fourth, with Associated fifth.

At a recent meeting of tax administrators from several western states, it was agreed that unless the individual states co-operated in making a uniform law governing taxes on gasoline, complications and conflicts would arise which would make it necessary to pass this function over to the Federal Government. This is of interest to the oil companies of California as there is now an initiative measure to come before the people, which if carried, will increase the State tax from 2 to 3 cents. This would make the tax paid by California motorists on gasoline one of the heaviest in the United States. There is a great deal of opposition to this measure and various organizations throughout the State, especially in the southern part, are actively working against it. It is doubtful if it will carry at the coming election.

TOO LATE TO CLASSIFY

WANTED—The address of Ernest E. Siler. Important information wanted. Please address Box B-462, The Oil and Gas Journal, Tulsa, Okla.

ROYALTIES FOR SALE—One-tenth of one-eighth interest 480 acres in New Mexico for $100. Three tests now drilling near this land. Box B-465, The Oil and Gas Journal, Tulsa, Okla.

THOROUGHLY EXPERIENCED refinery man desires communication with anyone needing such a man. Box B-464, The Oil and Gas Journal, Tulsa, Okla.

Improved Production Methods Main Theme Program of Engineers

The tentative outline of the subjects to be discussed at the meeting of the Petroleum Division, American Institute of Mining and Metallurgical Engineers in Tulsa, October 11-14, has been received from F. Julius Fohs, chairman of the division.

The meeting will be held in co-operation with the Mid-Continent Oil and Gas Association and the Mid-Continent Section, American Institute of Mining and Metallurgical Engineers.

In an accompanying letter, Mr. Fohs says that most of the subjects have been assigned to competent engineers who have agreed to prepare the papers. The names of the engineers will be submitted later.

"This program," writes Mr. Fohs, "has been in contemplation for some time, and while, to some, it may seem inappropriate that a program discussing methods of increasing production should be given at a time when there is an apparent tendency toward overproduction, it has been prepared with a view to discussing a number of very vital subjects to the oil industry, for both its immediate and future benefit. It is my belief that stress should be put upon methods of increasing production and production temporarily held in leash—to cutting down on the starting of new wells as being the better economic process."

The outline of subjects, which is headed "Increasing Production From Oil Fields; With Special Attention to the Mid-Continent," follows:

Increasing Recovery in New Pools

1 Solubility of Gases in Crude Oils and Resultant Effects Upon Viscosity and Surface Tension.
2 Modern Methods of Equipping and Handling Flowing Wells in Mid-Continent Fields.
3 Gas Lift Flowing of Wells in the Mid-Continent District.
4 Methods of Handling Pumping Wells to Conserve Gas.
5 A: Advantage of Unit Operation in Oil Fields.
B: Economic Effect of Increased Recovery Methods.

Salvaging Oil in Developed Pools

1 Increasing Recovery in Mid-Continent Fields and Its Economic Effects.
2 Application of Marietta Process to Delaware Pool.
3 Comparison of Pressure and Vacuum Methods of Production.
4 Economic Effects.

Improved Drilling and Production

1 North Central and East Central Texas:
Methods Used in the Powell Field in Determining Water Shutoff Levels and Methods of Effecting Shutoff.
2 Gulf Coast Fields.
3 Oklahoma and Kansas.
4 Panhandle District:
Drilling Practice
Production Problems.
5 Economic Effects.

Mid-Continent Oil & Gas Association banquet; addresses by some of the heads of the industry.

A. I. M. & M. E. subscription luncheon to plan establishment of local clubs affiliated with the division and discuss methods of electing division officers.

Trips to Oklahoma oil fields where special methods are in use.

Colombia Shipments Soon to Aggregate 30,000 Bbls. Daily

By N. O. Fanning
New York Bureau, The Oil and Gas Journal.

NEW YORK, Aug. 21.—Estimated receipts of crude and refined oil by water at Atlantic Coast ports for July totaled 17,798,000 bbls., a daily average of 577,000 bbls., compared with a total of 19,196,000 bbls., or 635,000 bbls. daily, in June, and 17,404,000 bbls., or 561,000 bbls. daily, in July, 1925.

The contribution made by the Gulf Coast ports to Atlantic receipts was smaller in July than in June, 1926, or July, 1925, due principally to a falling off in the Port Arthur and Houston districts. Receipts from the Baton Rouge-New Orleans area in July, 1926, increased to 3,254,000 bbls., a gain of 777,000 bbls. over June, and of 729,000 bbls. over the corresponding month of 1925.

Outside of the Gulf Coast division, the outstanding change in July was a decline of 1,170,000 bbls. in total receipts from the Pacific Coast compared with the preceding month, representing a drop from 3,158,000 bbls. in June, to 1,988,000 bbls. in July. Pacific Coast receipts in July a year ago amounted to 1,968,000 bbls.

The following tables show total daily average receipts (estimated) from the various divisions, for July, 1926, June, 1926, and July, 1925 (figures in barrels):

	July, 1926	June, 1926	July, 1925
Baton Rouge and New Orleans	3,254,000	2,477,000	2,525,000
Port Arthur, Sabine & Beaumont	3,835,000	4,756,000	4,816,000
Houston, Texas City and Galveston	4,069,000	4,691,000	4,726,000
Gulf Coast	11,158,000	11,924,000	12,067,000
Pacific Coast	1,988,000	3,158,000	1,968,000
Mexico	3,571,000	3,546,000	3,109,000
Other Imports	1,081,000	568,000	260,000
Total	17,798,000	19,196,000	17,404,000
Daily Averages			
Baton Rouge and New Orleans	104,000	82,000	82,000
Port Arthur, Sabine and Beaumont	124,000	158,000	154,000
Houston, Texas City and Galveston	132,000	156,000	155,000
Gulf Coast	360,000	396,000	391,000
Pacific Coast	66,000	104,000	63,000
Mexico	115,000	117,000	100,000
Other Imports	36,000	18,000	7,000
Total	577,000	635,000	561,000

Imports from Mexico in July showed little change from those of June, the July figure being 3,571,000 bbls., against 3,546,000 in June, and 3,109,000 bbls. in July, 1925.

Receipts From Colombia

A new source of raw material for Atlantic Coast refineries was added to the list in July, when initial shipments were made from Colombia, South America, to Bayonne and Baltimore. The first cargo arrived at New York, July 10, and the total amount received up to the end of the month is estimated at 392,000 bbls. These shipments are expected to increase as the movement gets under way, the amount available for delivery being reported close to 30,000 bbls. a day, or at the rate of 900,000 a month. Some of this oil, however, may go to Halifax or Montreal, or to the Gulf Coast.

The receipts from Colombia were partly instrumental in boosting the imports from all South American countries to a new high monthly record in July of 1,081,000 bbls. a daily average of 36,000 bbls. It is estimated the imports from this division will be at the rate of 2,000,000 bbls. a month within a few months.

AFFECTS ACCUMULATION

Capt. E. de Hautpick, I. R. E., in an article entitled, "Underground Architecture of Oil Fields," in the July 31 issue of the Mining Journal, lays stress upon the importance of the underground architecture as a necessary condition affecting oil accumulation in commercial quantity. All deposits of these substances, when studied in detail, are seen to depend on a number of factors, of which the underground architecture or structure is one. It should be ascertained whether the formation which is looked upon as a possible oil producer was old and possibly compacted, cemented, or otherwise altered, before the supposed favorable structure was formed, for the physical condition of the prospective oil rocks at the time of the earth movement would have an important influence on the possible migration of hydrocarbons from their disseminated state to some concentration point (a pool).

PLAN LOADING RACKS FOR PANHANDLE FIELD

AMARILLO, Tex., Aug. 24.—It is reported that the Texas Pipe Line Co. is preparing to build a loading rack in Gray County close to the Pampa Field, and has asked for bids to be submitted for the construction of 6 miles of 6 inch pipeline. The capacity of the proposed rack is said to be 18 cars.

The White Eagle Oil & Refining Co. is also reported to be considering the construction of a 26-car loading rack in the Hutchinson County end of the Panhandle. The White Eagle rack will be located on the Santa Fe tracks according to reports, and will be used to ship oil to the company's refineries at Augusta, Kans., and Fort Worth, Tex.

OIL MINING IN ASSAM

A Reuter statement says that oil mining in Assam, India, is making fair progress. The exploration of the Digboi Field, belonging to the Assam Oil Co., has proved beyond doubt that the oil-bearing possibilities of this field are very great. All the preliminary difficulties have been overcome, and a considerable increase in crude production has been secured.

LOCATE FUELING STATION

A survey of the Island of Pichiqique, off the coast of Lower California, is being made by the Mexican Government with the view of locating a marine petroleum fueling station, both for Mexican and foreign ships.

CALIFORNIA STOCKS DOWN

LOS ANGELES, Calif., Aug. 24.—The production of crude oil in California in the month of July totaled 18,743,191 bbls., a daily average of 604,635 bbls.

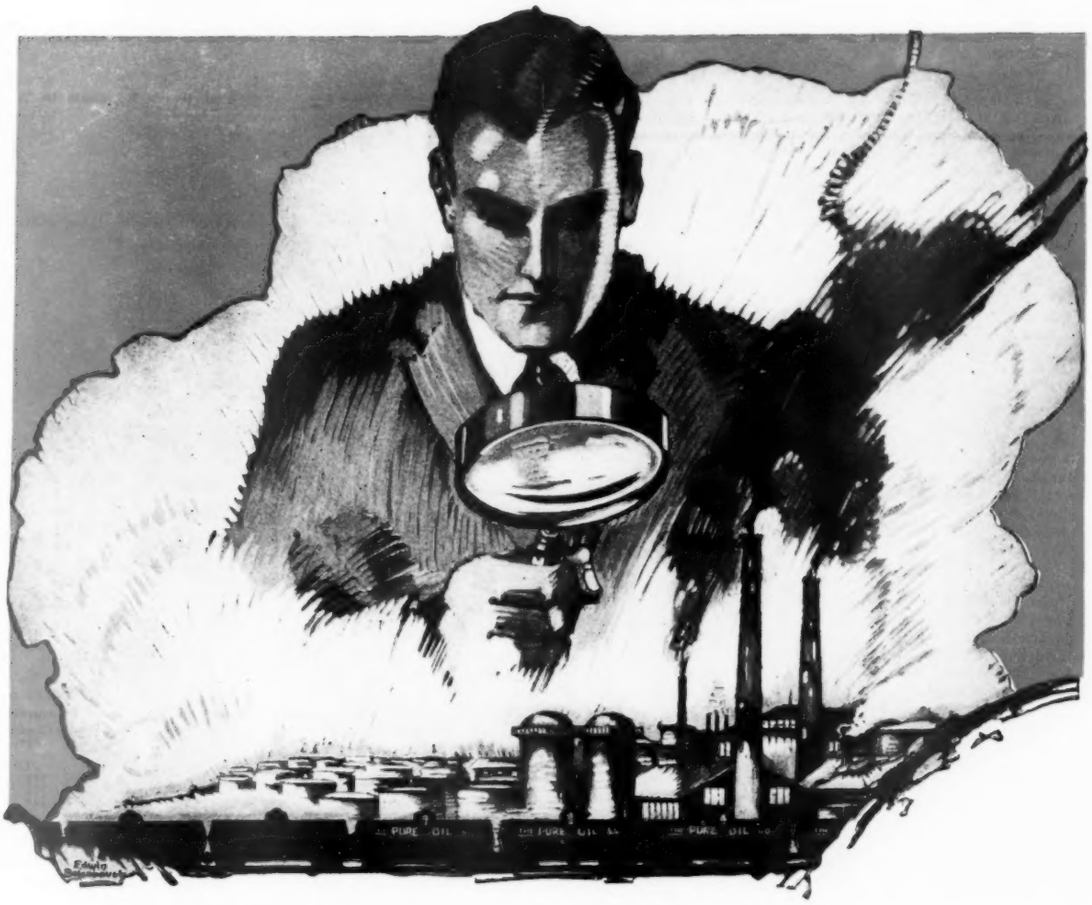
Stocks at the end of July were 148,001,772 bbls., a decrease of 2,512,588 bbls. in total fluid stocks. The principal classification of crude, gasoline and tops are all reduced.

MINNESOTA OIL MEN TO MEET

CHICAGO, Aug. 17.—The Minnesota Petroleum Association will hold a district meeting at Rochester, Kohler Hotel, on September 3. The association announces that the State Department of Inspection has extended the time after which all gasoline pumps must bear the sign, "State Inspected Gasoline. Price ——— Cents." Penalty is provided for non-compliance with this regulation.

DORER GOES TO AMARILLO

R. J. Dorer, manager of the Western Distributing Co., Eldorado, Kans., has resigned and accepted a position with the McIntire Lumber Co. at Amarillo, Tex.



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Distilling Oils Under High Pressure

Schulze Method for the Manufacture of Lubricating Oils Shows That Process Can Be Operated on Commercial Scale With Pressure of 3 mm.

By Benjamin T. Brooks*

The advantages and markedly different results obtained by distilling lubricating oils at absolute pressures of 3 to 5 mm. as contrasted with former practice at 40 mm. or higher, appears to have been first shown, and the practicability of so operating industrially first demonstrated, by John E. Schulze.

The effect on the boiling point of lowering the absolute pressure is much more pronounced, for a given difference in pressure, at very low pressures than at moderate vacuum. A black car oil distilled by Schulze illustrates this (Table 1).

The rapid lowering of boiling points with decrease of absolute pressure, particularly at low pressures, below 40 mm., is shown by Figure 2, recently given by Steinschneider.

It is, of course, true that at absolute pressures as low as 3 mm., the oil vapors occupy a large volume, approximately 250 times the volume at atmospheric pressure, though this volume ratio is slightly reduced by the lower distillation temperatures resulting from the low pressure. In order to provide for this large vapor volume and prevent the choking effect which would result from the usual still construction, Schulze provides as many as 10 vapor outlets, 10 inches diameter each, on each 10 by 30-foot vacuum still. With this multiplicity of vapor outlets the still shows practically the same absolute pressure, within 1 mm. as shown by the manometers on the receivers and on the lines adjacent to the vacuum pumps. These outlets dip slightly away from the still, considerable condensation being effected by air cooling before passing to the water-cooled condenser, which functions as much as a cooler as a condenser. Somewhat less than 1 per cent of light, volatile, malodorous oil is taken off in a separate overhead line, leading to a separate condenser; this overhead vapor and gas line is directly connected to the vacuum pump. The bulk of the distillate flows by gravity to a series of receivers which are evacuated at the beginning of the run, the evacuation being back through the condensers and light overhead line to the vacuum pump. The stills and all the lines are welded throughout, with the exception of the manholes on the stills and the large gate valves in the oil lines connecting the various receivers, these valves being screwed in, not flanged.

The process is being operated both by the batch and continuous systems, using 10 by 30-foot stills suitably braced inside. Schulze has also adopted a type of furnace setting by which the stills are very uniformly heated, largely by radiant heat. Stills heated in this way which have been in practically continuous operation for about two years show no signs of buckling or having been locally overheated.

The vacuum pumps employed have been considerably improved to meet the requirements of this process. The power consumption is very small, two vacuum pumps being mounted on one base and driven by one 40-horsepower motor. Worthington "feather" valves are a noteworthy feature of these pumps, as is the pump design, which practically eliminates dead air space. The total power consumption at one plant, including lighting and incidental pumping was 1.5 kilowatt-hours per barrel of crude charged.

Method of Operation

High-vacuum distillation is probably most advantageous in the case of wax-free oils, not only on account of the relatively low market value of such crudes, but also because the absence of paraffin wax makes the production of finished lubricating oils in this way an exceedingly direct and simple process. Gasoline and kerosene, if present, should be removed in a preliminary topping distillation and, although some gas oil may be taken over in this way, care should be taken not to crack the oil. Very heavy crudes, such as heavy Smackover oil, is first dehydrated and charged directly into a vacuum still, the gas oil distilled under a moderate vacuum and the vacuum is then raised to the usual operating pressure. In this method of batch operation the still temperatures may reach 575 degrees to 625 degrees Fahrenheit, depending upon the character of the oil and its resistance to cracking. The lubricating oil distillate thus obtained is emulsified with just sufficient concentrated caustic soda to combine with the naphthenic acids and without separating these soaps the oil is re-distilled at 3 to 5 mm., cutting the fractions according to the viscosity desired. These distillates are color stable and substantially odorless and tasteless as produced, without acid or any other treatment. In order to remove moisture and brighten these distillates, the receivers are provided with closed steam pipes by which means the oil is heated to about 200 to 225 degrees Fahrenheit and blown with air until bright. No other refining treatment is necessary if the charging stock has not been previously damaged by cracking and the distillation has been properly carried out.

Yields From Various Heavy Crudes

Owing to the high vacuum and the correspondingly low still temperatures employed, no loss by cracking or decomposition occurs, and the yields are appreciably greater than are obtainable by other refinery practice. Probably the maximum loss by cracking occurs in the prevailing method of distilling crudes of high wax content by fire alone. While this has the merit of cracking most of the amorphous wax and thus facilitating the usual dewaxing operations, this cracking of lubricating oil and the resulting necessary acid refining probably averages more than 2 gallons per barrel of crude. However, there seems to be some question as to whether lubricating oils of satisfactory cold test can be made by the direct high-vacuum distillation of wax-bearing crude oils; no plants are operating in this way on such oils, so far as the writer is aware. An alternative method is to redistil the dewaxed unfinished lubricating oils, as ordinarily produced, by the high vacuum method. If such oils are not too highly cracked, finished lubricating oils, not requiring acid treatment, can thus be made. While the maximum advantage of the high vac-

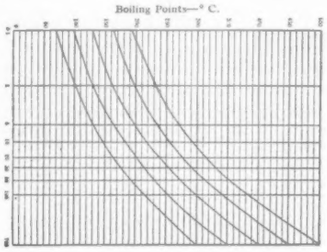


Figure 1—Relation between boiling point and absolute pressure.

*Paper presented at meeting of Petroleum Division of the American Chemical Society held in Tulsa and reprinted from Industrial and Engineering Chemistry, official publication of society. Fore part of paper dealing with early development in high vacuum distillation not given.

Table 1—Distillation of Heavy Residuum in Vacuo

Absolute pressure Mm. Hg	Per cent over at 572° F. (300° C.)	Initial b. p. of fraction ° F.
40	30	455
25	50	437
15	68	419
5	94	364

Absolute Pressure—Mm. of Mercury

Table 2—Tests on Commercial Oils Distilled Under High Vacuum

Test	Gravity ° Be.	Viscosity at 100° F.	Open Cup Flash ° F.	Open Cup Fire ° F.	Color N. P. A.	Carbon Conradson	R. E. No. Minutes (Emulsion
			Light Oils				
1	23.8	204	360	420	3+	0.03	6
2	20.3	197	340	390	1½	0.03	6
3	25.0	235	380	450	3	0.12	9½
4	20.2	215	335	385	3½	0.23	5
5	22.4	250	370	415	5	0.14	3
6	25.5	200	395	470	2½	0.05	4½
7*	20.7	200	370	440	2	0.02	1
			Medium Oils				
8	26.4	285	415	485	5	0.50	5
9	21.0	240	340	400	2	0.07	7
10	23.8	330	395	470	4	0.50	14
11	21.7	340	370	435	3½	0.13	2
12	20.5	583	360	425	7	0.20	17
13	24-26	390	415	480+	4	0.10	12½
	24-26	280-290	415+	480+	6	0.22	25
14*	20.2	300	380	450	2½	0.03	1
15*	17.4	642	360	420	1¾	0.05	1
			Heavy Oils				
16	26.4	405	420	480	5	0.60	5
17	19.0	470	360	415	2	0.05	7
18	23.8	515	425	495	5	0.31	26
19	19.8	510	360	430	4	0.17	9
20	26.0	98 (210° F.)	460	555	8	0.64	11
21	22-24	449	420+	480+	6+	0.22	26
22	23-25	460-470	440+	505+	6+	0.28	35
23*	19.9	500	415	500	2½-3	0.05	1
24*	19.3	750	435	530	3½-3¾	0.07	1
25*	18.9	1000	460	565	4	0.09	1
26*	....	175 (210° F.)	450	510	2½	0.10	1
27 (Bright stock)	22-24	150-160 (210° F.)	520	600	D	2.10	(High) 30+

*High vacuum.

Table 3—Vacuum Distillation Analyses of Commercial Oils

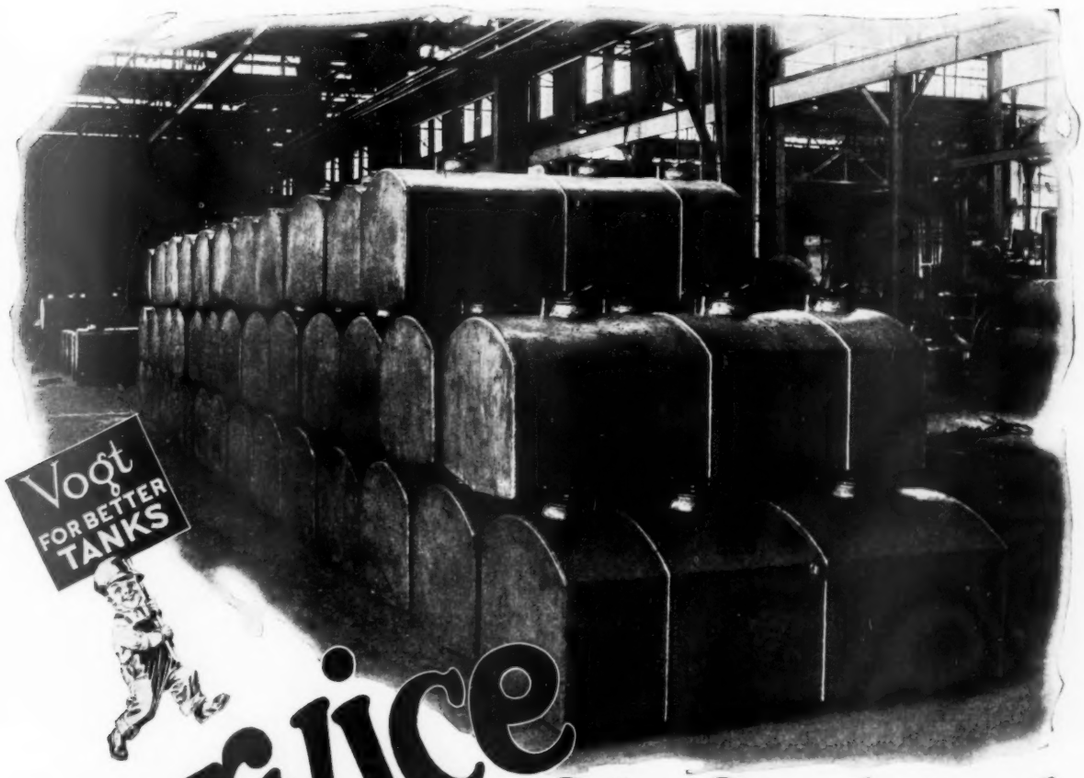
	Original oil	Vacuum distillates 10%	20%	30%	90-95%
	Medium				
Gravity, ° A. P. I.	20.7	22.8	21.5	....	19.7
Flash, ° F.	340	265	310	....	475
Fire, ° F.	415	320	370	....	565
Viscosity at 100° F.	341	64	111		2146
Color, N. P. A.	3	1.0	1.0		3
	500 Red				
		10%	20%	80-90%	90-95%
Gravity, ° A. P. I.	19.3	22.5	20.5	17.8	17.8
Flash, ° F.	355	280	320	440	475
Fire, ° F.	420	315	375	540	565
Viscosity at 100° F.	503	65	123	2106	2793
Color, N. P. A.	6+	1½	1½	4	5
	Heavy				
				1st 30%	Next 65%
Gravity, ° A. P. I.			20.9	22	20.3
Flash, ° F.			365	320	420
Fire, ° F.			430	370	500
Viscosity at 100° F.			519	139	1001
Color, N. P. A.			4	1	2½

Table 4—Vacuum Distillates from Ordinary Still Bottom

	Fraction (1)	(2)	(3)	(4)	(5)
Gravity, Degrees A. P. I.	18.5	18.2	18.0	17.5	17.1
Flash, Degrees Fahrenheit	440	455	470	490	520
Flash range, Degrees Fahrenheit	420	440	460	480	500
	450	470	480	500	540
Fire, Degrees Fahrenheit	530	545	560	575	600
Viscosity, seconds Saybolt at 212° Fahrenheit	70	85	100	125	150
Viscosity range at 212° Fahrenheit	60	80	90	110	140
	80	90	110	140	170
Color, N. P. A.	4½	5	5½	6	6½
Pour test, A. S. T. M., Degrees Fahrenheit	5	5	5	10	15
Initial Boiling Point, Degrees Fahrenheit	475	490	520	550	575
All distilled over, Degrees Fahrenheit	490	520	550	575	590

Table 5—Comparative Tests of Typical Light, Medium and Heavy Oils

	Ordinary Paraffin Base	Distillation Naphthene Base	By High Vacuum Distillation Narrow C
Light Oils			
Gravity Degrees, A. P. I.	30	21	21
Flash, Degrees Fahrenheit	405	320	360
Flash range, Degrees Fahrenheit	290	250	340
	550	460	380
Viscosity at 100° F., Sec. Saybolt	190	200	200
Viscosity range, 100° F., Sec. Saybolt	60	60	100
	600	2000	300
Color, N. P. A.	2½	2½	1½
Pour test, A. S. T. M., Degrees Fahrenheit	30	Below Zero	Below Z
Initial boiling point at 1.5 mm., °F.	374	320	400
Per cent distilled up to 450° F., 1.5 mm.	10	60	98
Medium Oils			
Gravity, A. P. I.	29	20.5	20.5
Flash, Degrees Fahrenheit	425	330	380
Flash range, Degrees Fahrenheit	390	255	370
	550	480	420
Viscosity at 100° F., Sec. Saybolt	260	300	300
Viscosity range at 100° F., Sec. Saybolt	70	60	200
	1400	2200	450
Color, N. P. A.	3½	3	2
Pour test, A. S. T. M., Degrees Fahrenheit	35	Below Zero	Below Ze
Initial boiling point at 1.5 mm., degrees Fahrenheit	410	350	435
Per cent distilled up to 475° F., 1.5 mm.	22	46	98
Heavy Oils			
Gravity, Degrees A. P. I.	28.5	19.5	19.5
Flash, Degrees Fahrenheit	435	360	400
Flash Range, Degrees Fahrenheit	395	260	385
	500	510	430
Viscosity at 100° F., Sec. Saybolt	365	500	500
Viscosity Range, 100° F., Sec. Saybolt	75	70	400
	1600	2400	700
Color, N. P. A.	5	3½	2½
Pour test, A. S. T. M.	35	Below Zero	Below Zero
Initial boiling point at 1.5 mm., Degrees Fahrenheit	437	390	440
Per cent distilled up to 500° F., 1.5 mm.	35	56	98



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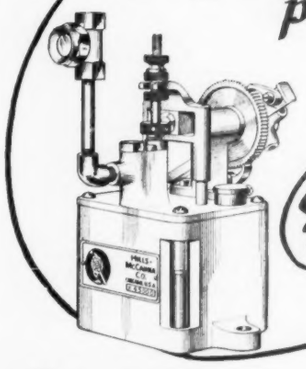

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uum distillation method is not realized in this combined operation, there is an added advantage in the quality of the lubricating oils so produced. The question of quality is discussed later.

Some of the results obtained by Schulze on commercial operation follow:

Smackover Crude, from Nevada County, Ark.

Gravity, ° A. P. I.	18.6
Flash, ° F.	115
Fire, ° F.	190
Viscosity at 100° F.	445
Sulfur, per cent	3.3
	Per cent yield
Gas oil, 29.6° A. P. I.	28.9
Finished lubricating oil	32.15
Asphalt bottoms	37.5
Fuel oil	0.61

The composite lubricating oil had a viscosity of 287 at 100 degrees Fahrenheit and showed a color of 2¾ N. P. A. The separate fractions showed viscosities ranging from 100 to 1,500 seconds at 100 degrees Fahrenheit.

Topped Gulf Coast Crudes

A composite of topped Gulf Coast crudes, including Hull, Orange, Goose Creek, and Mirando crudes, from which 30 per cent of gas oil has been distilled, gave 77 per cent of lubricating oil distillate and 23 per cent of asphaltic residuum. The composite lubricating oil showed a viscosity of 552 at 100 degrees Fahrenheit and 18.4 degrees A. P. I. On redistillation of this composite lubricating oil, the following yields were obtained:

Viscosity		Per cent of topped crudes
129	at 100° F.	13.8
350		11.2
70	at 210° F.	18.4
100		5.17
122		5.48
122		3.45

Topped Mirando Crude

	Viscosity		Per cent
Gas oil			23.0
Lubricating oil	100 to 200	at 100° F.	11.5
	77 to 140	at 210° F.	20.0
			26.9
			10.0
Asphaltic residue			9.0

Heavy Vinton Crude

Heavy Vinton crude, 18.8 degrees A. P. I., yielded 42.4 per cent of unfinished lubricating oil distillate which on redistilling gave the following cuts:

Viscosity		Per cent of crude
88	100° F.	3.31
138		4.59
278		7.88
950		8.26
94	210° F.	8.46
146		4.77
186		1.84 (overhead

Other Tests

Mexican crude from the Cacalilao Field 12 degrees A. P. I. gravity and 3.8 per cent sulfur yielded 26 per cent unfinished composite lubricating oil and 50.05 per cent asphaltic residuum.

Crude oil from the Coalinga, Calif., field yielded 52 per cent of finished lubricating oil.

Quality of High-Vacuum Oil Distillates

Many aspects of the question of quality of lubricating oils are warmly debated, and while commercial bias undoubtedly enters into such discussions, there are a number of generally recognized tests which, taken collectively, are believed to be qualitatively, if not quantitatively, indicative of the quality of lubricating oils. Moreover, lubricants are put to such a variety of uses that the interpretation of the results of tests is a matter of great uncertainty. Some go so far as to waive all tests aside and assert that quality of an oil depends upon such vaguely defined properties as "oiliness" and selective adsorption, which so far have eluded all attempts at accurate definition and measurement. In this paper the usual commercial tests are given for a number of oils distilled under high vacuum and without chemical refining and the results of the same tests given for a number of the best known commercial oils now on the market. The tests given in Table 2 were made in the laboratory of one of the largest refining companies, and are believed to be correct within the pardonable experimental error of the methods employed.

Lubricating oils distilled by fire, or fire and steam, seldom have viscosities exceeding 350 seconds at 100 degrees Fahrenheit. On redistilling such oils under a very high vacuum, to prevent decomposition, the resulting fractions show a very wide spread in viscosity and the first fractions, amounting to at least 10 per cent and frequently more than 20 per cent, show characteristics which class these light fractions with heavy gas oil. In order to obtain oils of relatively high viscosity as ordinarily manufactured, it is necessary to blend the distilled oils with residual oils such as refined bright stocks. The substantial amount of gas oil generally present in the distilled oil results in a very considerable sacrifice of viscosity, requiring much more bright stock to obtain blends of a given viscosity than would otherwise be necessary. The results of high-vacuum distillation analyses made by Mr. Schulze of three commercial oils which are fairly typical are shown in Table 3. It will be noted that a commercial oil having a viscosity of 519 seconds contained 30 per cent of oil having a viscosity of 130 seconds and that the remainder had a viscosity of more than 1000.

One of the characteristics of the lubricating distillates produced by high-vacuum distillation is that the cuts can be made quite narrow, corresponding to a narrow range of boiling point and viscosity. In the usual practice gas oil is produced by cracking of the more valuable lubricating oils throughout the distillation period. It is the presence of these light decomposition products in very substantial proportions which gives such distillates their pronounced odor and taste, makes them discolor on exposure to air, and necessitates the use of sulfuric acid, alkali, and usually fuller's earth to put them in a marketable condition of refinement, as is well known. The troubles incident to the refining of lubricating oils with acid, alkali, etc., are too well known to warrant comment. That the color stability and other properties of the distillates produced by the Schulze process are such that no acid is required to refine them has already been noted. This color stability is also indicated by the fact that the final distillates can be heated to 250 degrees Fahrenheit and blown with air until bright without darkening in color. The values reported for Conradson carbon and de-emulsification are also noteworthy.

Schulze[12] has pointed out that it is commercially feasible to obtain distilled oils having viscosities as high as 170 to 180 seconds at 210 degrees Fahrenheit and that unblended distillates even approaching this viscosity have not been known in the industry heretofore. The still bottoms from naphthenic crudes, left behind after the usual distillation, yield large percentages of heavy lubricating oil distillates when distilled at 3 to 5 mm., this percentage being as high as 90 per cent in many cases. When the still bottoms or cylinder stocks is derived from a paraffin-base oil, free from asphalt, Schulze has shown that about 60 per cent of such a product can be distilled to obtain distillates ranging from 400 to 900 seconds viscosity at 100 degrees Fahrenheit, color 2 to 5 N. P. A., and leaving a very novel, undamaged cylinder stock, an extremely viscous heavy oil, having a viscosity as high as 250 seconds at 212 degrees Fahrenheit, 630 degrees Fahrenheit flash test and about 700 degrees Fahrenheit fire test.

The oils described in Table 4 were obtained by Schulze by high-vacuum distillation, 1.5 mm. absolute pressure, from a quantity of ordinary still bottoms from naphthenic oils.

A further comparison of typical light, medium, and heavy commercial lubricating oils and high-vacuum distillates of about the same viscosity brings out certain differences and these differences were in part used by Schulze[12] in substantiating his claims as to the novel character of the distillates obtainable by distillation in a high vacuum. (Table 5).

Considerable interest has been shown in a recent paper on high-vacuum distillation by Steinschneider.[13] The work of Steinschneider and his associates, Singer and Porges, has already been referred to.[14] In this recent paper, Steinschneider referred to plants operating in America, employing 5 to 25 mm. absolute pressure, but did not state what

[12] U. S. Patent, 1,448,709.
[13] J. Inst. Petroleum Tech., 11, 514 (1925).

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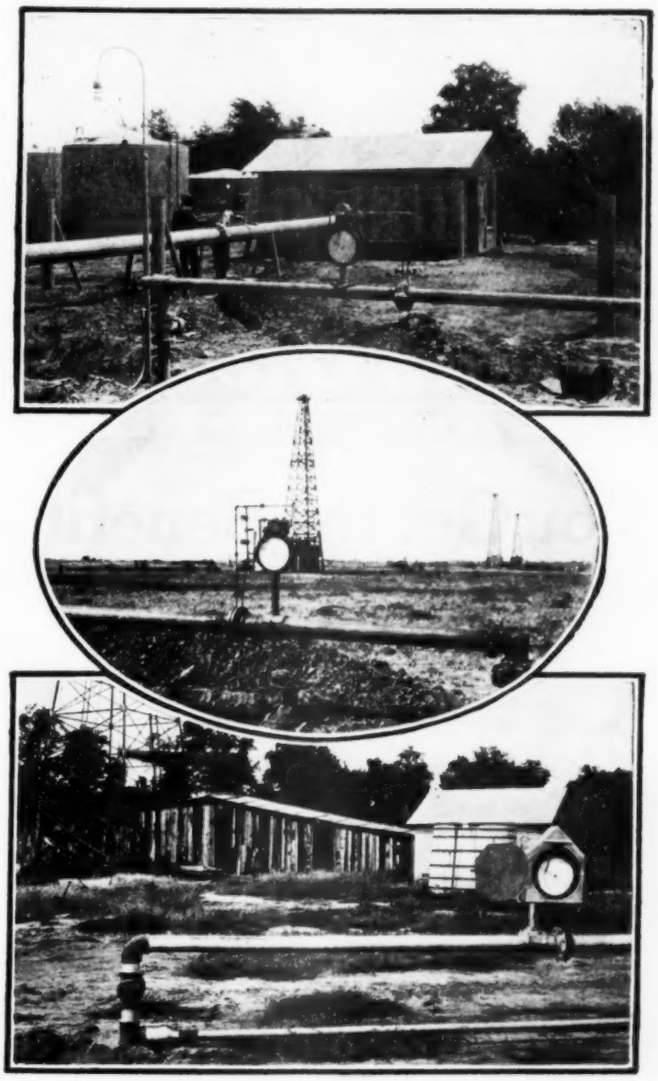

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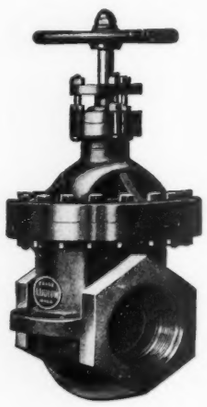

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plants or particular processes he had in mind. In the published discussion of the paper Dvorkovitz stated that while partial vacuum had long been used at Baku the high vacuum referred to by Steinschneider had not been used; Jenkin also stated that, while operation at 20 to 45 mm. absolute pressure seemed possible, "none of the five or six benches of Bruenn-Koenigsfelder stills with wh'ch I am acquainted normally operate at anything like this vacuum. The usual pressure varies between say 75 mm. and 110 mm., and if for some special reason they manage to reach 50 mm. it is considered something of an achievement."

[9]See also Porges, U. S. Patent 1,011,079 (1911); Steinschneider, U. S. Patent 981,953 (1911) and 1,162,729 (1915).

Shale Oil Retorts Will Be Constructed At Government Plant

WASHINGTON, D. C., Aug. 21.—The Bureau of Mines has purchased an American type 20-ton oil shale retort, known as the Dundas-Howes, or N-T-U retort, which will be erected immediately at the experimental oil shale plant of the bureau near Rulison, Colo. The new retort will be erected alongside, and operated parallel with, the bureau's Pumpherston retort of the Scottish type, now being heated in preparation for experimental operation.

Laboratory experimental work of the Bureau of Mines on oil shale, extending over six years, has indicated two entirely different methods of producing refinable oils from oil shales. Both methods are fundamentally sound, so far as can be determined by laboratory investigation. In the first method, the shale is heated slowly and enough scavenging steam or gas passed through the distilling mass to prevent undue decomposition of the oil. This method results in a relatively low yield of crude oil of relatively high quality, and a relatively low yield of fixed gas of relatively high heating value. The crude oil so obtained can be sent to the refinery stills without further treatment.

In the second method the shale is heated rapidly, care being taken not to reach temperatures high enough to decompose the oil products, and a large excess of scavenging gas is passed through the distilling mass to remove distillation products as rapidly as they are formed. This method yields a maximum quantity of crude oil of relatively poor quality and a maximum volume of fixed gases of relatively low heating value. The crude oil so produced requires a preliminary coking distillation before going to the fractionating stills, but either method, properly operated, apparently will produce the same results in finished oil products.

Features of Retort

Engineers of the Bureau of Mines, in making a selection of retorts for the experimental oil shale plant, took into consideration, first, the desirability of having equipment which would carry out the two different methods of distillation; second, sufficient flexibility of control so that distillation temperatures, distillation zones, gas velocities, etc., could be readily varied and controlled; and third, mechanical simplicity.

The Pumpherston retort, the result of over 70 years of practical experience in oil shale retorting in Scotland, exemplifies slow distillation, and the N-T-U retort, under development in large scale units for over three years in California, exemplifies rapid distillation. Both retorts are flexible in control, and both mechanically simple. The Pumpherston retort is apparently particularly suited for relatively low grade shales and the N-T-U retort will probably show to best advantage on richer shales. In the opinion of the engineers of the bureau the two retorts form an admirable combination of experimental equipment for the chief purposes of the retorting investigation, i.e., (1) to transpose to retorting units of commercial size the conditions determined by laboratory study most suitable for producing maximum amounts of refinable products; and (2) as large scale study directs, to modify these conditions so as to produce best results at lowest cost.

The experimental plant is complete, except for the erection of the N-T-U retort and its auxiliary equipment. It is expected that the Pumphertston retort will be put into operation about August 15, and the N-T-U retort about September 15.

Construction to date has been carried on, and all equipment, including the N-T-U retort, has been purchased with the initial $90,000 appropriation made available March 3, 1925. An additional appropriation of $89,000 became available July 1 for plant operation during the fiscal year 1926-1927.

Plant Equipment

The plant consists of the two retorts and their auxiliary equipment (condensers, scrubbers, exhausters, measuring instruments, piping, etc.); water supply system, which pumps water from a well near the Colorado River 1½ miles to a storage tank at the plant; 70 horsepower boiler plant (two 35 horse power boilers) equipped for coal or fuel oil firing, 5 K.W. turbo-generator set for plant lighting and laboratory power; 40 horse power gas producer for starting and stand-by gas supply; three 25-bbl. oil run and separating tanks; two 250-bbl. storage tanks; one 25-bbl. fuel oil tank; small pipe still with 25-bbl. fat and lean oil tanks, condensers, cooling sections, etc., for recovering scrubber gasoline; machine shop and store room; control laboratory; quarters for plant employes; a 5,600-foot aerial tramway for transporting shale from the mine to the plant, with necessary terminal machinery; oil shale crusher and storage bins and chutes.

The organization of the oil shale section is part of the petroleum division of the Bureau of Mines, under H. H. Hill, chief petroleum engineer, and consists of the following staff:

Martin J. Gavin, refinery engineer, in charge oil shale investigations, Bureau of Mines; J. S. Desmond, associate chemical engineer, in charge of construction and operation, experimental oil shale plant; Frank A. Dalburg, in charge of mining operations; J. W. Horne, associate chemist, in charge of co-operative oil shale research laboratory, Boulder, Colo.; I. N. Beall, associate refinery engineer, in charge of experimental oil shale refinery; D. A. Gould, assistant engineer, experimental oil shale plant; B. A. Landry, assistant engineer, experimental oil shale plant; R. S. McIntyre, assistant engineer, experimental oil shale plant; W. L. Finley, assistant engineer, co-operative oil shale laboratory, Boulder, Colo.

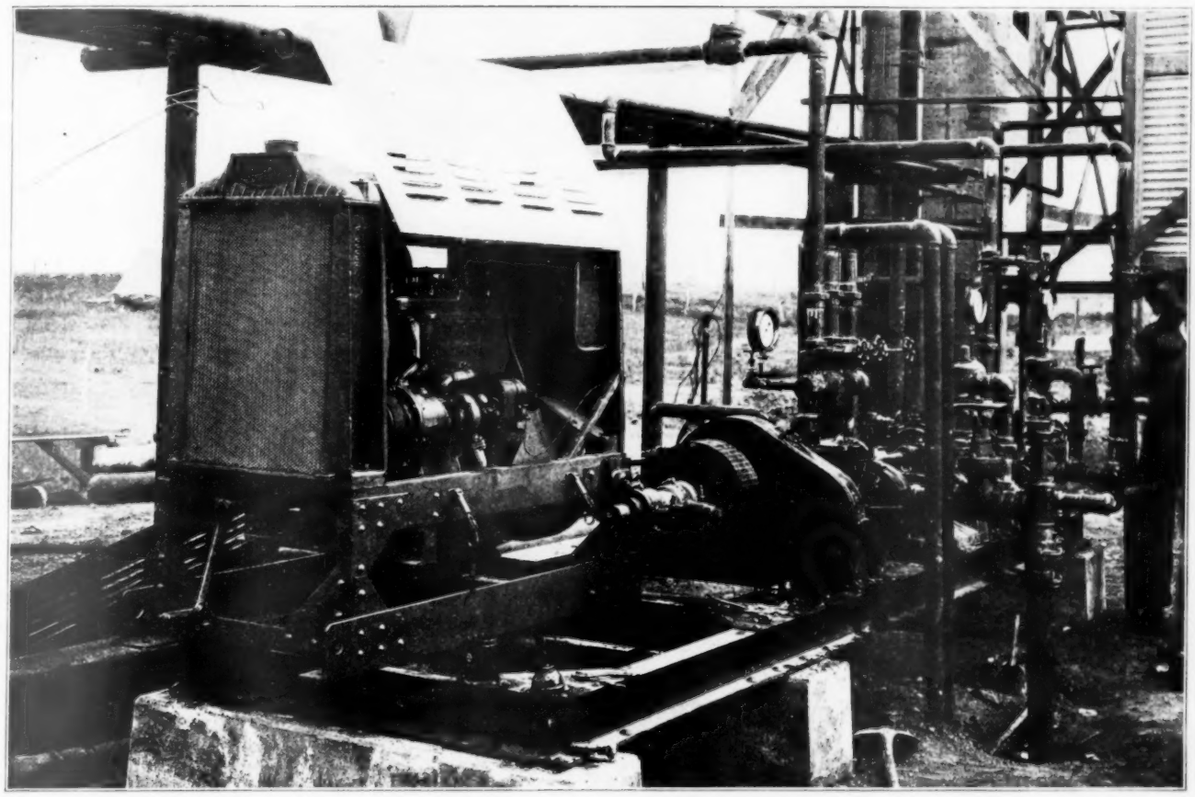
ALBERTA COMPANIES TAKE OUT CHARTERS

By Victor Lauriston

CHATHAM, Ont., Aug. 21.—Not since 1914 has there been such a siege of Ottawa by Alberta oil promoters as in the past six months. Within that period, slightly more than 125 oil company charters have been issued to incorporators by the department of the Secretary of State at Ottawa. This total, though unusually large, falls far short of the incorporations in the palmy days of the 1914 Calgary boom, when between 500 and 700 companies were incorporated.

There have, apparently, been few charters secured under the Alberta provincial laws. This is doubtless due to the restrictions imposed by the province after the boom of 1914. Of the 125 or more companies incorporated under Dominion charter in the past six months, the majority have their offices in either Calgary or Edmonton, Vancouver, Winnipeg and Toronto have a few such companies.

The Canada Gazette, the official government publication, reveals in the issues from January 1 to July 24, inclusive, a total of more than 125 charters



Making gasoline with Buda Power

Pictured here is a typical Buda installation at Mounds, Oklahoma. It shows a Buda four-cylinder high duty engine direct-connected with a 3,000-gallon semi-portable natural gasoline plant manufactured by the Forrest E. Gilmore Company of Tulsa, Oklahoma.

Like many other oil field installations, this job calls for continuous and reliable power for many hours at a stretch.

Because of their unusual stamina and general serviceability, Buda engines are in wide demand for oil field work.

For full information regarding any power requirement, address the Buda Southwestern Office at Tulsa, Oklahoma.

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Manufacturers of gasoline, natural gas and kerosene engines ranging in size from 20 to 87 horsepower

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A safety feature combined with practical utility.

An ideal packing ring for gas wells or wells on which the vacuum is being held. It packs both around the tubing and on the casing head top, while the slips carry the tubing.

Made from the best quality electric steel castings and especially hardened slips.

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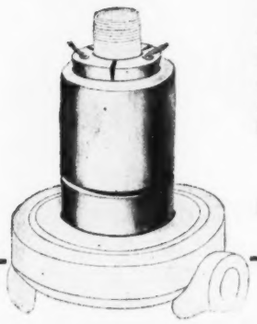
So low in price you cannot afford to be without one on each well.



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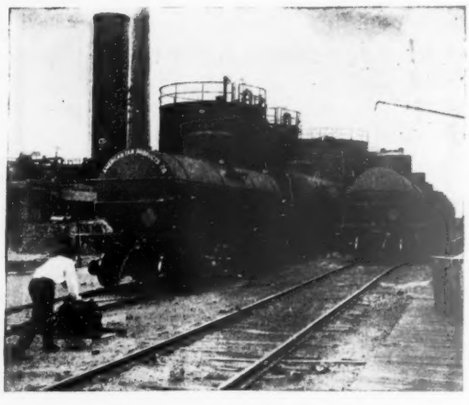

Pulling 72-ton tank cars with a 480-pound Sullivan Portable Hoist at the American Tar Products Co., Cicero, Ill. Track is level and the average length of haul is 165 feet.

QUARTER-TON HOIST PULLS 72-TON CARS

In the picture, a 72-ton tank car is being pulled away from the loading spout by a 480-pound Sullivan electric hoist. Both loaded and empty cars are handled by this outfit much quicker and much cheaper than hand labor could handle them—yet no big investment in equipment is required, and power and upkeep are low.

Sullivan Portable Hoists are light, portable, air or electric driven machines. They will pull 50 tons or more on level track, or lift a ton vertically, on single line. They are in popular use for hoisting plates, in the erection of steel tanks.

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issued, with an aggregate capitalization of close to $76,000,000; while the estimated revenue in fees received by the department is approximately $40,000.

Analyzing the figures on capitalization, there have been six companies capitalized at less than $50,000 each; four at $50,000, one at $125,000, three at $150,000, one at $200,000, six at $250,000, eleven at $300,000, three at $350,000, one at $400,000, forty-two at $500,000, three at $600,000, one at $650,000, seven at $750,000, two at $800,000, twenty-nine at $1,000,000, three at $2,000,000 and one at $2,400,000.

A glance at the list of incorporations indicates that historic events and localities have been well remembered. The list includes Vimy, Locarno, Strand, Neptune, Mount Vernon, Wellington, Albion, Chinook, Hyde Park, Oklahoma, Delphi, Empress, Anaconda, Big Ben, Wabash, Grenville, Unity Valley, Argyle, Golconda, Confederation, Dixie, Anglo-Dutch, Stampede, Ranier, Harvard and Famous.

The rush for oil company charters ceased about three weeks ago. In the July 24 issue of the Canada Gazette the number of applicants had dwindled to one. Applications reached the peak in March and April, but publication of incorporations hit the high mark in April and May, when the department had begun to cope with the applications.

Foreign Regulations Affecting Petroleum Described in Report

By Charles E. Kern
Washington Bureau,
The Oil and Gas Journal.

WASHINGTON, D. C., Aug. 21.—The increase of custom duties on gasoline by Japan, the modification of the Turkish petroleum and benzine monopolies, the oil discovery in northern Ontario, reports of a collapse of the Oil Monopoly Bureau at Canton, China, Belgium's higher prices on all oils, Venezuela's breaking of its record for crude oil exports, and Salvador's elimination of import duties on oils for fuel for Diesel engines, are all referred to in a report just issued by the Department of Commerce.

This report is made up from correspondents for consular officers, trade commissioners and other sources and is one of the most complete surveys of oil conditions throughout the world that has been issued.

Some of the most important items of information in this statement follow:

Petroleum Production—During the first three months of 1926, the petroleum production of France totaled 17,908 metric tons, compared with 17,435 tons in the corresponding period of 1926.

Argentina-Uruguay: Bids Requested—The Argentine Government oil wells are to supply the 50,000 tons of petroleum for which the Uruguayan Government recently asked bids.

Russian Exports

Russia: Naphtha Syndicate—The negotiations between the Russian Naphtha Syndicate and an American oil company are continuing and appear to include arrangements of a large part of the Baku and Grozny oil fields. The Syndicate claims that these fields can be so worked as to produce 120,000,000 bbls. annually by 1930. One-half of this quantity Russia is to have free for export to Europe. This amount would be about 30 per cent of the European demand for petroleum and would restore to Russia its old place in the continental market.

British Guiana: Oil Prospecting—Two geologists have arrived in British Guiana to make explorations in the northwest district on behalf of the recently incorporated British Guiana Oil Fields, Ltd., and the British Oil Co.

Canada: Oil Discovery in Northern Ontario—The discovery of oil was reported at the end of June by a party of prospectors looking for coal indications along the Missanaibi, Oposatila and Sawestika Rivers. The discovery is being given much serious consideration by local in-

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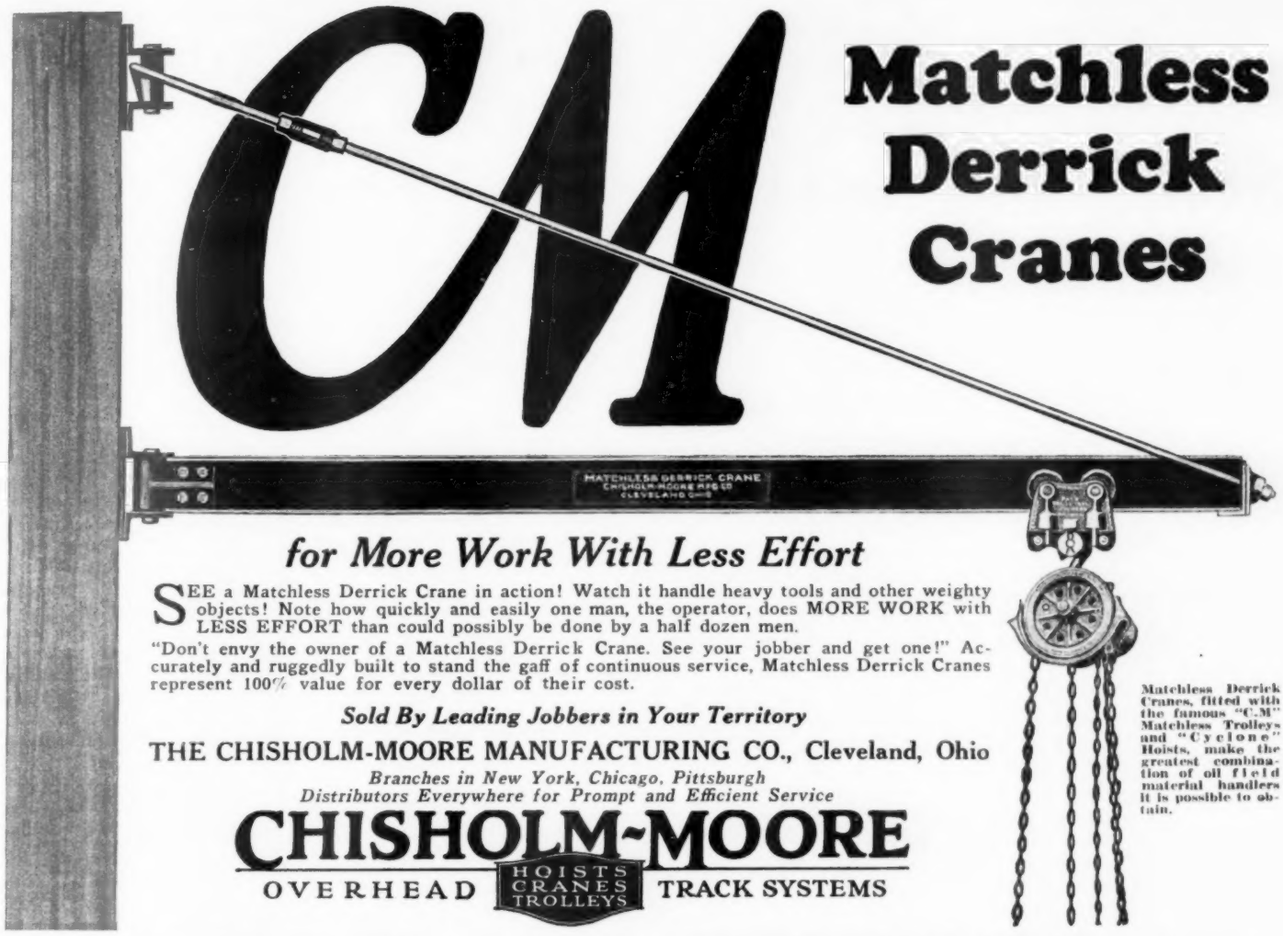

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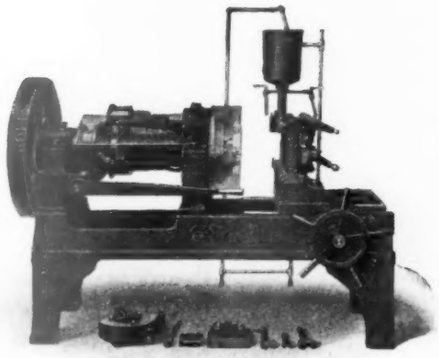

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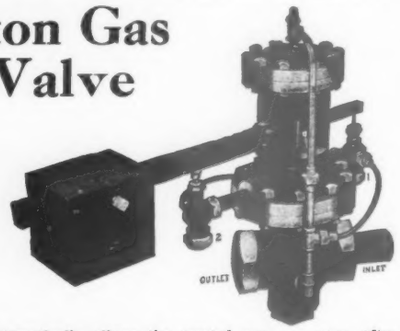

The Fulton Relief Valve automatically allows the treated gas to escape, after the compression has reached the stage at which all gasoline is removed from the gas under treatment, and permits a fresh supply of untreated gas to enter. The weights on the lever can be accurately adjusted to operate at the desired point of compression. When this point is reached the valve blows until the pressure falls to 20 or 25 pounds, or until the treated gas has escaped.
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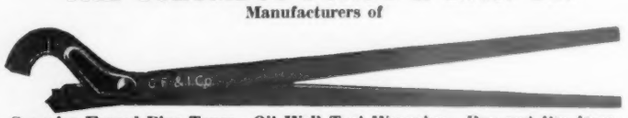

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teresting, but its actual value cannot yet be estimated. The company which located the indications has staked about 12 square miles of claims along the rivers. Oily scum on mineral springs and river edges and the known presence of oil shale are the basis of the present interest.

Analyses of surface specimens of the shale have shown a crude oil yield as high as 5.5 per cent, with a probability that the more deeply buried portions would have a higher oil content. It is pointed out, however, by one expert that a great deal of the formation lacks the impervious cover to retain oil.

Diesels in Salvador

El Salvador: Import Duties Abolished—The legislative assembly has passed a law abolishing import duties has passed a of all kinds, including those for storage, on the importation into Salvador of oils for special use as fuel for Diesel engines. The announced purpose for the abolition is the conserving of the forests and wood resources of the country. The law took effect June 17, the date of its publication in the official gazette.

Czechoslovakia: Imports of Russian Oil—Certain Czechoslovakian firms importing and selling mineral oil products have entered into negotiations with the Russian Commercial Mission in Prague regarding the direct representation of the Naphtha Syndicate of the Soviet Republics in this country.

Jamaica: Petroleum Imports and Prices—Jamaica imported in 1925, 1,161,819 imperial gallons of kerosene, of which the United States supplied 1,002,457 gallons and the remainder came from Dutch West Indies and Trinidad. Gasoline imports totaled 2,030,732 gallons, the United States supplying 706,152 gallons, Trinidad 723,519 gallons, and the Dutch West Indies 525,172, other imports being scattering.

The high prices of gasoline and kerosene at present are largely due to the import duties of 3 pence preferential and 4 pence general on illuminating oils and 3¾ pence preferential and 5 pence general on motor spirit. Converted into United States currency and American gallons, prices on June 30, 1926, were equivalent to $0.34½ per gallon of gasoline, and ran as high as $0.45 in outlying points, while kerosene prices amounted to $0.40 at Kingston and up to $0.50 outside that city.

Japan's Oil Tariff

Japan: Petroleum Market—The new tariff enacted in March, 1926, raised the duty on gasoline from 50 sen to 80 sen per 10 gallons, with a view to the protection of the domestic refining industry. Although it was expected that this would result in an appreciation in the price of gasoline, prices have fallen from 10.60 yen per case to 10 yen.

This decline is due in part to the advance in the yen exchange (quoted at $0.4702 the first of May), but in a greater measure to the heavy imports made early in the year in anticipation of the enactment of the revised duties. According to the Jiji Shimpo the total imports of gasoline during the first three months of 1926 amounted to 9,362,914 gallons, compared with 6,808,000 gallons during the corresponding period of 1925.

The fall in prices is causing a heavy loss to petroleum companies and has caused small importers to suspend business. The decrease is general except in the case of illuminating oil. The greater part of the Japanese petroleum importation at present is crude oil which is refined in Japanese factories and made chiefly into light oil and gasoline.

Belgium: Petroleum Market—Belgian prices on all oils increased considerably in May, partly due to exchange fluctuations and more to the new taxes voted by the Belgian Parliament. Prices increased three times, the closing price being 2.50 francs per liter, or 222 francs per 100 liters to garages. The demand for fuel oil underwent no material change, and prices rose from 50 to 60 francs per 100 kilos.

China: Canton Oil Monopoly—Recent reports indicate that the Oil Monopoly Bureau of Canton is likely to be abolished on account of protests from the

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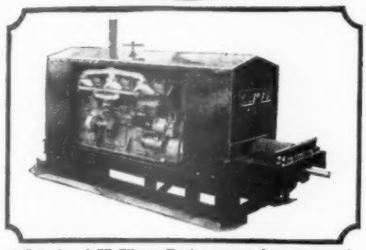

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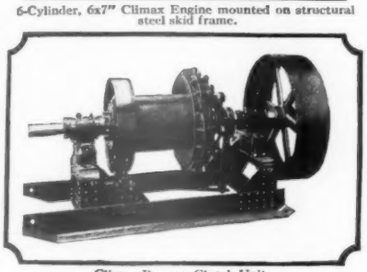
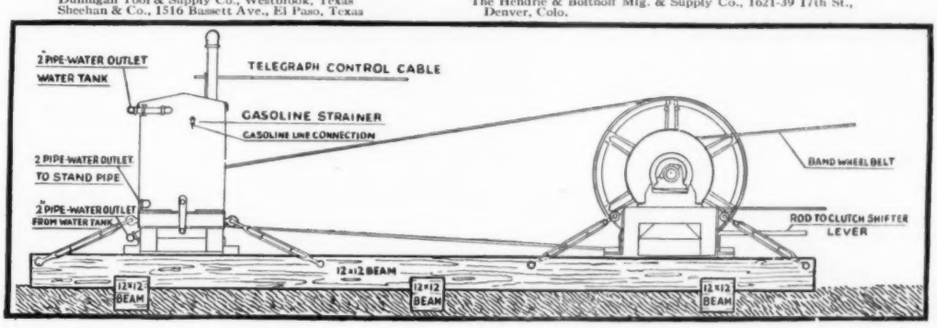


Climax Reverse Clutch Unit



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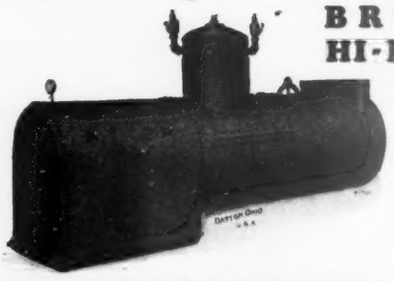

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Cantonese people, who have suffered considerably on account of the high tax collected. The refusal of both American and British oil companies to ship oil to Canton so long as the tax bureau is functioning has provided an opportunity for independent importers of kerosene to sell large quantities in this market.

It is now reported that an excise tax will be collected on each case of kerosene imported, but the amount and the probable effect of the changing situation on the attitude of the large companies cannot be determined.

Turkish Monopoly

Turkey: Modification in Monopoly Law—The Grand National Assembly of Turkey voted July 5 to modify the provisions of the petroleum and benzine monopolies. Under the terms of the modified law, petroleum and benzine may be imported freely by any company or merchant upon condition that the bills of lading for all shipments are made to the Monopoly Administration. The consignee upon the arrival of the shipment will pay to the administration the monopoly tax of 8 piasters per kilo and they may then clear the goods from the custom house and dispose of them as he wishes.

The change is attributable to the administration's lack of means for efficient distribution. Within a few days of the beginning of the monopoly, stocks of gasoline and kerosene became depleted throughout the country and prices rose accordingly where they were obtainable, being reported in certain districts as high as 20 Turkish pounds per bidon of 4 imperial gallons. (1 Turkish pound—$0.53.)

In other localities they could not be obtained at any price, and farmers were seriously embarrassed by not being able to obtain motor fuel for their tractors. Consumption, and the income of the government, were consequently decreased.

Venezuela: Petroleum Industry—The exportation of crude petroleum from the Maracaibo district in May totaled 2,934,186 bbls. This is the highest monthly export ever sent from Venezuela and in the opinion of many of the local experts is but an indication of the great quantities which will eventually be shipped from this country.

Increasing activity is manifest in every section of the Maracaibo Basin and all producing companies are increasing their forces and areas. Many of the non-producing companies are engaged in test drilling in a number of districts.

During the first weeks of 1926, a few men in every company were gathering statistics and consulting transportation and production experts in an effort to estimate the exportation from the district for the current year. The estimates as finally issued ranged from 30,000,000 to 35,000,000 bbls., and some few much higher, but the majority of the experts believed not more than 33,000,000 bbls. could be sent out owing to the scarcity of tankers.

Many of these estimates are now being revised and a million or so barrels added to the figures first announced as a result of the increased activity in the fields and the purchase and building of new tankers.

Andian National to Double Its Colombia Pipeline Facilities

By Victor Lauriston

CHATHAM, Ont., Aug. 23.—The arrival of the first shipload of crude oil to reach Montreal, Que., from the new Colombia Field was made the occasion of an interesting ceremony intended to mark the inauguration of a new commercial and industrial bond between Canada and South America, made possible by co-operation between four organizations which are largely Canadian in their development and control—the Tropical Oil Co., which owns the producing wells in the interior of Colombia; the Andian National Corp., Ltd., which built the pipeline that transports the crude oil to seaboard; the International Petroleum Co., which is furnishing the vessels to bring the oil to Montreal; and Imperial Oil,

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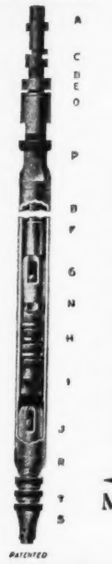

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Ltd., to whose refineries at Montreal East the Colombia crude is consigned.

A battery of cameras took moving pictures and stills as the visitors in turn shook hands with Captain Rowley of the Albertolite, and congratulated him on being the pioneer in bringing a cargo of Colombia crude to Canada. Harrington Smith briefly referred to the important development represented in the arrival of the Albertolite; and then called on Sir Herbert Holt, in his capacity as chairman of the directorate of the Andian National Corp., to turn the valve which started the first pump to discharge the cargo.

Sir Herbert Holt said it was gratifying to him that the success of these enterprises assured Canada of a supply of oil under all-Canadian control, making the Dominion independent of foreign sources of supply. He made the announcement that the Andian National Corp. would immediately make a new stock issue of $6,250,000 for the purpose of duplicating the pipeline, thus almost doubling its present capacity of 30,000 bbls. a day.

Captain Flanagan of Toronto, president of the Andian National Corp., said that the company's undertaking was largely made possible by the prestige and support which Sir Herbert Holt had brought to the organization.

Victor Ross of Toronto, vice president of Imperial Oil, Ltd., said that the Andian National Corp.'s achievement was notable not only for its financial and commercial possibilities, but because it was a triumph for Canadian engineers and officials and because it opened up new opportunities for young Canadians.

First Cargo's 90,000 Bbls.

The Albertolite's cargo consisted of 90,000 bbls. of oil, which was discharged in about 20 hours, and represents about four days' supply for the Imperial Oil, Ltd., refineries at Montreal.

The arrival of the cargo at Montreal sees the carrying to a successful conclusion of plans which have been six years in the making and execution, and the attainment of an objective which cannot fail to add tremendously to the prestige and influence of Canadians in South America.

When, in 1920, the International Petroleum Co. of Toronto, committed itself to the task of developing a commercial oil field in Colombia, knowledge of the area acquired, outside of its oil possibilities, was meager. The concession itself was a wilderness. To the east and south lay upland country, healthful and salubrious, inhabited for generations by a comfortable and more or less prosperous people; but the valley lands with their steaming temperatures and unbelievable rainfalls lay tenantless except for the remnants of some Indian tribes. Transportation facilities consisted of river boats and canoes, and the caprices of the Magdalena made river navigation one long struggle against nature.

However, one salient fact stood out in strong relief; the presence of oil had been definitely established. Back in the days of the Spanish conquest the existence of petroleum had become known, but until the early years of the present century the resource lay unappreciated and neglected.

Spaniards first explored the valley of the Magdalena and found at Infantas a substance identified as oil. But to them petroleum meant little. As a convertible resources it had no place in the scheme of existence, and so through the changeful and dramatic history of the country it lay, untended and ignored, until Senor de Mares, a French engineer, who had made Colombia his adopted country, became acquainted with the oil resources. He secured from the Colombian government in 1905 important concessions, and after ten years' search for capital for development managed to enlist the help of a coterie of Pittsburgh business men. In 1916, under the laws of Delaware, there was incorporated the Tropical Oil Co., which hauled drilling rigs and equipment 400 miles up the Magdalena River to Infantas, brought in three proven wells, and in 1920 entered into a transaction by which the International Petro-

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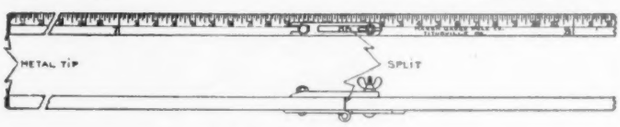

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leum Co. took over their company and concessions.

Proven Fields

The proven fields lie, climatically, in the tropics; topographically they are close to sea level. Access is by way of the rivers. But because of the immense amount of silt that is annually brought down the Magdalena from the rapidly eroding sedimentary regions above, immense bars form at the mouth, which make it impossible for ocean steamers to enter the river. To reach the interior waterways system from tidewater, one must proceed by a narrow-gauge railway from Puerto, Colombia, to Barranquilla, or by a 3-foot gauge railway from Cartagena, on the coast, to Calamar, on the Magdalena, a distance of about 60 miles. From Calamar to Barranca, the refinery town and debarking point for the oil fields, is, following the sinuosities of the river, some 375 miles. From Barranca Island to the oil fields the distance is 16 miles and to the known limit of the field is 35 miles farther.

It was to provide facilities for the delivery of crude oil from the Colombian Field to the Caribbean coast at Mamonal that the huge project of the Andian pipeline was conceived.

Foreseeing the success of the operations of the Tropical Oil Co. and the possibility of other oil fields adjoining or even more distant from the coast, the Andian National Corporation was organized by Canadian and European interests to construct the necessary pipeline system to carry the production of such fields to seaboard. The president of the Andian Nation Corp. at the time of incorporation was Sir Herbert Holt of Montreal, president of the Royal Bank of Canada.

Enlargement Necessary

Now comes the announcement by Sir Herbert Holt that owing to the rapid increase in the production of crude oil on the properties of the Tropical Oil Co. and in order to provide for transport of this crude, the Andian National Corp. has found it necessary to enlarge the capacity of the corporation's pipeline in Colombia from 30,000 to 50,000 bbls. a day.

The directors of the Andian National Corp. of which Sir Herbert is chairman have decided to finance this new construction by the issue of 625,000 shares of the initial capital stock of the corporation at the price of $10 a share. This issue of new stock will be made on the basis of one share of new stock for every four share of stock of the corporation issued and outstanding at the close of business on September 30 next. Each shareholder of the corporation will be entitled to subscribe and pay for one new share in respect of every four shares then held, payment to be made in United States funds.

STATES PAID BONUSES FROM MINERAL LEASES

Payments to State Governments of their share of receipts from bonuses, royalties, and rentals from oil, gas, coal, and other mineral leases on public lands for the fiscal year ending June 30, 1926, were announced at the Interior Department. Total payments made to the various states amounted to $3,173,851.27, representing 37½ per cent of receipts from leases on public lands within their borders in accordance with the terms of the General Leasing Law.

The following is a tabulation of the payments to states covering their receipts under the General Leasing Law for the past fiscal year:

Alabama	$ 345.00
California	433,475.44
Colorado	31,531.94
Idaho	370.36
Louisiana	350.06
Montana	98,482.97
Nevada	561.43
New Mexico	6,539.01
North Dakota	3,457.36
South Dakota	90.06
Utah	12,311.93
Washington	637.12
Wyoming	2,585,698.59

Receipts for the fiscal year of 1926 from mineral leasing paid to the State Governments were $283,056.80 less than the previous year.

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UNION OIL TO DRILL MAXUDIAN PROPERTY

LOS ANGELES, Calif., Aug. 21.—To obtain additional supplies of crude oil, the Union Oil Co. of California has entered into a drilling contract with the Maxudian Petroleum Corp. of New York, under which it will develop on a 50-50 basis 25,000 acres of proven land on the latter's concession, the district of Paez, Venezuela, according to a statement made by Roderick Burnham, manager of lands for Union Oil.

The land which the Union Oil Co. will drill borders the northwest part of Lake Maracaibo, Venezuela's famous oil district. It is located in the State of Zulia. Preparations for the drilling of the first well will be made as soon as the Maxudian Petroleum Corp. has settled certain boundary disputes between itself and the Atlantic Refining Co., Mr. Burnham said.

Entrance of Union Oil of California into the Venezuela petroleum field marks the second South American country in which the California organization has large interests. The company now owns in fee a total of 425,000 acres in Colombia. Extensive geological surveys have been completed on this property although no drilling has been done.

"With the new Venezuela project, the Union Oil Co. strengthens its foreign position," Mr. Burnham said. "The foreign holdings of the company constitute the third line of reserve through which the Union's petroleum production is assured for many years to come. The first line is the large undeveloped proven holdings of the company in Orange and Santa Barbara Counties. As the second line, the company has more than 30,000 acres in Colorado and Wyoming on which the existence of several fields has already been established."

The company owns in fee, or mineral rights in fee, 189,636 acres and holds under lease 189,343 acres, in the United States. In a recent report made to bankers of the company, an independent appraiser estimated that the company's proven oil reserves in California alone amounted to 200,000,000 bbls.

RATES ON DERRICKS DECIDED REASONABLE

By Charles E. Kern

WASHINGTON, D. C., Aug. 21.—In the case of the Carter Oil Co. vs. Atchison, Topeka & Santa Fe Railroad Co. and others, rates on iron and steel derricks in car loads from Sistersville, W. Va., to destinations in Oklahoma and Kansas, have been found not unreasonable and the complaint is dismissed. In this case the commission says the complainant has shown that the rates on oil well supplies to selected points in Arkansas and Louisiana are generally lower than the rates atacked and that the rates on structural iron and steel and iron and steel pipe to the destinations here considered are lower than the rates on oil well supplies, but the rates on oil well supplies are not attacked and it is not convincingly shown that derricks are sufficiently analogous to the first-named commodities, the traffic in which is extremely heavy and eagerly sought by the carriers, to warrant according the same rates to derricks.

MIRANDO SHIPMENTS

HOUSTON, Tex., Aug. 21.—Tank car shipments of Mirando crude during July totaled 531 cars against 447 cars in June. In addition, 25 tank cars were shipped from Noledo (Piedras Pintas Pool).

The Magnolia Petroleum Co. is reported to have 700,000 bbls. of Mirando crude in steel tankage at Oiltown.

The Magnolia Pipe Line Co. will run the production of the Sun Oil Co. in the Lockhart (Lytton Springs) Field, aggregating 500 bbls. per day. The Sun Oil Co. has been shipping it out in tanks cars to Sabine Pass. The posted price for Lockhart crude is $2.49.

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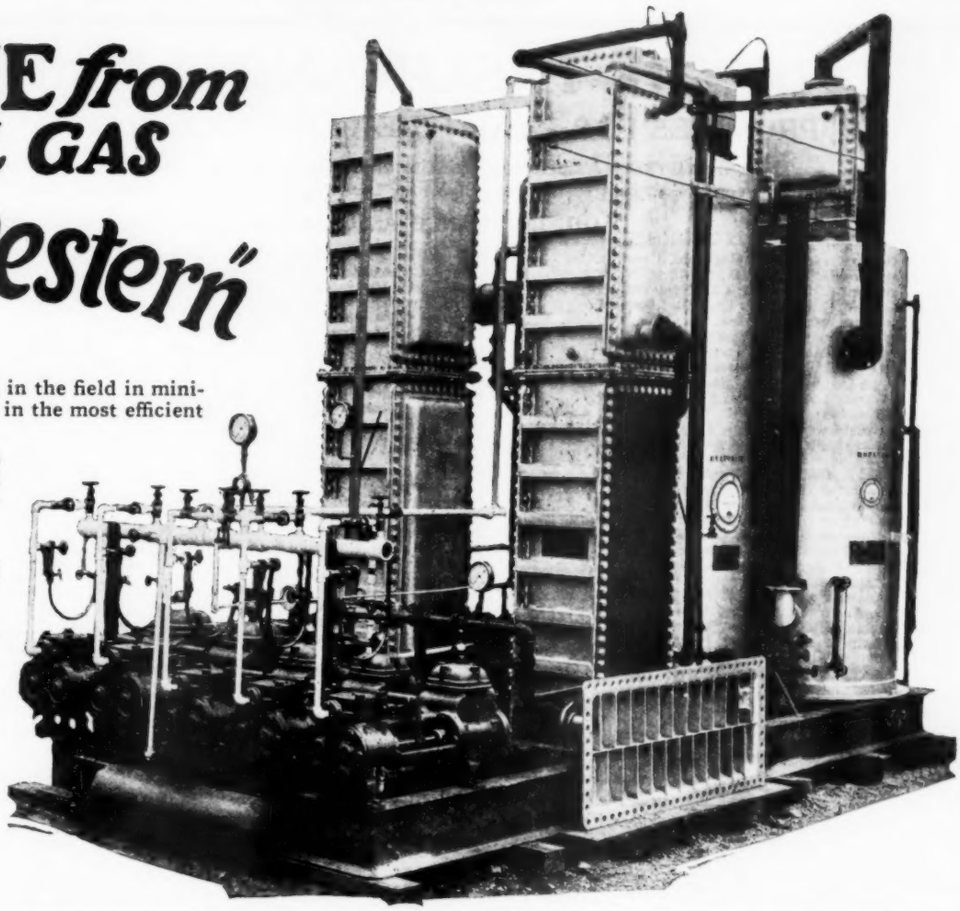

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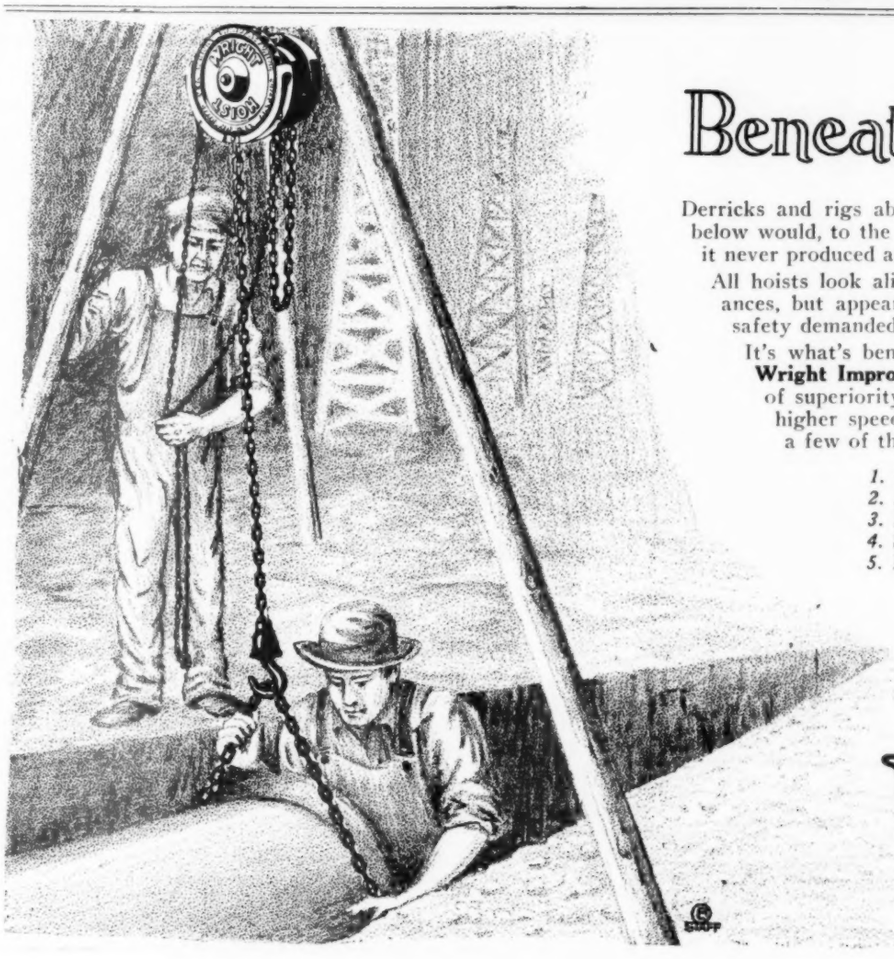

Beneath the Surface—

Derricks and rigs above ground with not a trace of petroleum below would, to the casual observer, be an oil field, even though it never produced an ounce of oil.

All hoists look alike, or nearly so, from all outward appearances, but appearances cannot give the stamina, speed, and safety demanded of hoists in oil or gas field.

It's what's beneath the surface that counts. Look into a **Wright Improved High Speed Hoist**—see its many points of superiority—note the causes for its greater longevity, higher speed, and ease of operation. Let us enumerate a few of them.

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AMONG THE PURPOSES FOR WHICH THE OIL INSURANCE ASSOCIATION WAS ORGANIZED ARE:

To enable oil operators to secure sufficient dependable insurance to adequately protect their interests.
To furnish property holders and those controlling oil business expert engineering and inspection service, so methods of insuring this class may be standardized, and efficient fire protective devices installed and properly maintained, thereby stabilizing the business to the point which will enable insurance companies generally to accept the class at fair cost and under equitable policy rates.
To make available the most business-like insurance arrangement for all oil companies.

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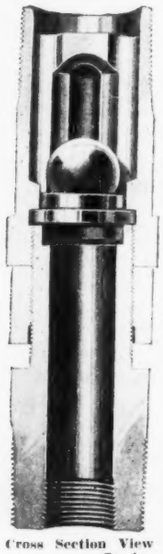
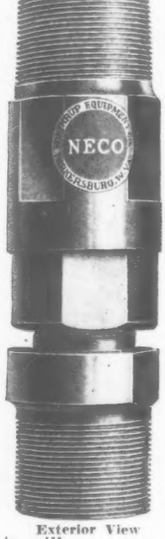


Cross Section View

A Standing Valve in Good Standing With Every Pumper Who Has Used It

NECO



Exterior View

This valve has been given the approval of practically every Production Superintendent in the Gulf Coast, Arkansas and Louisiana fields. It will handle better than 30 per cent more oil than the ordinary type of standing valve. It is machined from solid steel bars—so it will last for years. We equip it with *oversize* Neco Chrome Steel Ball and Seat and it is tapped for an oversize gas anchor.

The Ball cannot possibly rock in the Cage. The Cage, in turn, is prevented from unscrewing by the wide nut that securely locks it on the body.

This is the valve you will eventually use. Why not buy it now?

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Bartlesville Supply Co.
Larkin & Co.

Drop-Forged Wrenches (See Wrenches)—

Drops and Seats—
Norris Brothers, Inc.

Drums (See Barrels)—

Dynamos—
Westinghouse Electric & Mfg. Co.

E

Ejectors—
Penberthy Injector Co.

Electrical Equipment—
Fairbanks-Morse & Co.
Fyle National Co.
Wico Electric Co.

Electrical Apparatus (See Apparatus—Electric)—

Electric Drilling Equipment—
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Electric Steel Castings (See Castings—Electric—Steel)—

Elevators—Casing and Tubing—
Boviard Supply Co.
Bridgeport Machine Co.
Dunn Mfg. Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Wilson Oil Tools Corp.

Elevators—Rod—
B. & A. Specialty Co.
D. & B. Pump & Supply Co.
Dunn Mfg. Co.

Enamels—
Arco Company, The.
Detroit Graphite Co.
Sherwin-Williams Co.

Engineers—Consulting and Contracting—
Brooks Engineering Corp.
Hope Engineering & Supply Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Petroleum Engineering Corp.
Power Specialty Co.
Westcott & Greis.
Widdell Engineering Co.

Engineers—Fire Protection—
Brooks Engineering Corp.
Foamite-Childs Corp.

Engineers—Oil Buildings—
Austin Co.
International Derrick & Equipment Co.

Engineers—Oil Mining—
Ranney Oil Mining Co

Engineers—Oil Treating—
Barnickel, Wm. S., & Co.
National Gas Products Co.

Engines—Crude Oil—
Continental Supply Co.
Western Machinery Co.

Engines—Diesel—
Bessemer Gas Engine Co.
Busch-Sulzer Bros. Diesel Engine Co.
Foos Gas Engine Co.
McIntosh & Seymour Corp.
Western Machinery Co.
Worthington Pump & Machinery Corp.

Engines—Drilling—
Ajax Iron Works.
Bessemer Gas Engine Co.
Bovaird & Seyfang Mfg. Co.
Brownell Co., The.
Buda Co.
Buffalo Gasolene Motor Co.
Clark Bros. Co.
Climax Engineering Co.
Franklin Valveless Engine Co.
Hercules Motor Corp.
Pattin Bros. Co.
Power Mfg. Co.
Republic Supply Co.
Titusville Iron Works Co.

Engines—Gas—
Bessemer Gas Engine Co.
Bruce-MacBeth Engine Co.
Buda Co.
Buffalo Gasolene Motor Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Climax Engineering Co.
Continental Supply Co.
Cooper, C. & G., Co.
Emsco Derrick & Equipment Co.
Foos Gas Engine Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
International Supply Co.
Jones, S. M., Co.
Marion Mch., Fdy. & Supply Co.
Miller Improved Gas Engine Co.
National Supply Co.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Titusville Iron Works Co.
Waukesha Motor Co.
Western Machinery Co.

Engines—Gasoline—
Buda Co.
Buffalo Gasolene Motor Co.
Continental Motors Corp.
Fairbanks-Morse & Co.
Hercules Motor Corp.
International Harvester Co. of America.
Waukesha Motor Co.
Western Machinery Co.

Engines—Oil—
Bessemer Gas Engine Co.
De La Vergne Machine Co.
Fairbanks-More & Co.
Franklin Valveless Engine Co.
Ingersoll-Rand Co.
International Harvester Co. of America.
McIntosh & Seymour Corp.
National Supply Co.
Oil Well Supply Co.
Power Mfg. Co.
Reid, Joseph, Gas Engine Co.
Western Machinery Co.

Engines—Semi-Diesel, Oil—
Chicago Pneumatic Tool Co.

Engines—Steam—
Ajax Iron Works.
Frick-Reid Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.

Evaporators—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.

Extinguishers—Fire—
Foamite-Childs Corp.

F

Fabricators for Gasoline Plants and Refineries—
National Gas Products Co.
Stearns-Roger Mfg. Co.

Filters—Oil—
Burt Mfg. Co.

Fishing Tools (See Drilling and Fishing Tools)—

Fittings—Dropped Forged Steel—
Vogt, Henry, Machine Co.

Fittings—Forged Steel—
Central Forging Co.

Fittings—Malleable & Cast Iron—
Bovaird Supply Co.
Crane Co.
Frick-Reid Supply Co.
Walworth Co.

Fittings—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Kennedy Valve Mfg. Co.
Metric Metal Works.
Oil Well Supply Co.
Reading Steel Casting Co.
Republic Supply Co.
United Iron Works, Inc.
Victaulic Co. of America.
Walworth Co.

Fittings—Steel—
Dayton Pipe Coupling Co.
Kerotest Mfg. Co.
Ohio Steel Foundry Co.
Walworth Co.

Flanges—Brass, Iron and Steel—
Jefferson Union Co.
Metric Metal Works.
Walworth Co.

Flange Unions—
Dart, E. M., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Wheatley Bros. Machine Works.

Flashlights—
National Carbon Co.

Floating Roofs and Decks—
Chicago Bridge & Iron Works.

Floodlights—
Pyle-National Co.

Forging Billets—
Andrews Steel Co.
Harrisburg Pipe & Pipe Bending Co.
Heppenstall Forge & Knife Co.

Forgings—
Champion Machine & Forging Co.

Fuel Oil (See Oil—Fuel)—

Fullers Earth—
Sinclair Refining Co.

G

Gas Holders—
Chicago Bridge & Iron Works.

Gaskets—
Garlock Packing Co.
McCord Radiator & Mfg. Co.

Gaskets—Fibre—
Durabla Mfg. Co.

Gas Masks & Safety Appliances—
Mine Safety Appliance Co.

Gasoline—
Crown Central Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.

Gasoline—Natural—
Chestnut & Smith Corp.
National Gas Products Co.
Skelly Oil Co.
Warren Petroleum Co.

Gasoline Plant Equipment—
Bessemer Gas Engine Co.
Clark Brothers Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Widdell Engineering Co.

Gas Regulating Casinghead—
Davis, G. M., Regulator Co.
National Gas Products Co.

Gas Scrubbers—
National Gas Products Co.
Newton Process Mfg. Co.

Gauge Glass—High Pressure—
Durabla Mfg. Co.

Gauge Poles—
Marsh Gauge Pole Co.
Missouri Woodworking Co.

Gauges—Automatic Tank—
Brooks Engineering Co.

Gauges—Draft—
Brown Instrument Co.

Gauges—Oil—
Penberthy Injector Co.

Gauges—Pressure and Vacuum—
Bristol Co.
Brown Instrument Co.
Equitable Meter & Mfg. Co.
Metric Metal Works.

Gauges—Test—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Gear Driven Pumps (See Pumps)

Gears—Cut—
Nuttall, R. D., & Co.

Gears—Reduction—
Emsco Derrick & Equipment Co.
Nuttall, R. D., & Co.

Gears—Reverse—
Emsco Derrick & Equipment Co.

Generators—
Westinghouse Electric & Mfg. Co.

Generators—Acetylene—
Oxweld Acteylene Co.

Generators—Turbine—
Moon Manufacturing Co.
Pyle-National Co.
Westinghouse Electric & Mfg. Co.

Glassware—Chemical for Laboratory Use—
Illinois Glass Co.

Governors—
Equitable Meter & Mfg. Co.
Gardner Governor Co.

Governors—Boiler Feed—
Chaplin-Fulton Mfg. Co.
Fisher Governor Co.

Grating—Steel—
Blaw-Knox Co.

Grey Iron Castings (See Castings)

H

Hammers—Chipping and Caulking Pneumatic—
Chicago Pneumatic Tool Co.

Hammers—Riveting Pneumatic—
Chicago Pneumatic Tool Co.

Hangers—Iron and Steel—
Continental Supply Co.
Dodge Mfg. Corp.

Hangers—Tubing—
Hercules Tool Co.

Hatchets—Gauges and Thief—
Oil Conservation Engineering Co.

Heat Exchangers—
Carbondale Machine Co.
Griscom-Russell Co.
Hope Engineering & Supply Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.

Heat Interchangers—Fluid—
Braun, C. F., & Co.
Ross Heater & Mfg. Co., Inc.

Hoists—Pneumatic, Geared and Universal—
Chisholm-Moore Mfg. Co.
Yale & Towne Mfg. Co.

Hoists—Portable—
Chisholm-Moore Mfg. Co.
Ford Chain Block Co.
Sullivan Machinery Co.
Wright Mfg. Co.
Yale & Towne Mfg. Co.

Hooks for Rods and Tubing—
B. & A. Specialty Co.
Dunn Mfg. Co.

Hose—
Fenwick-Reddaway Mfg. Co.

Hose—Drillers—
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Hose—Oil Suction and Discharge
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Hose—Rubber—
Goodyear Tire & Rubber Co.
United States Rubber Co.

Hypochlorite of Lime—
Mathieson Alkali Works, Inc.

I

Injectors—
Penberthy Injector Co.

Inspectors—Pipe—
Hunt, Robert W., Co.

Insulation Materials—
Celite Products Co.
General Insulating & Mfg. Co.
Johns-Manville, Inc.

Insurance—Fire—
Oil Insurance Association.

Insurance—Tornado—
Oil Insurance Association.

Iron—Ingot—
American Rolling Mill Co.

J

Jacks—Hydraulic—
Bridgeport Machine Co.

Jacks—Lifting—
Templeton, Kenly & Co., Ltd.

Jacks—Pumping—
American Mfg. Co. of Texas.
American Wells Works.
Bessemer Gas Engine Co.
Braden Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Norris, W. C.
Spang & Co.

Jars—
Arbon, Paul, & Co.
Bridgeport Machine Co.
Spang & Co.

Jar Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

K

Kerosene—
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.

L

Lacquers—
Arco Company, The.
Sherwin-Williams Co.

Lanterns—Electric—
Delta Electric Co.

Lead and Mixed Metal Products—
Eagle-Picher Lead Co.
National Lead Co.

Lead in Oil—
Eagle-Picher Lead Co.
National Lead Co.

Lead Wool and Containers—
Eagle-Picher Lead Co.

Lighting Equipment—
Pyle-National Co.
Westinghouse Electric & Mfg. Co.

Litharge—
Eagle-Picher Lead Co.
National Lead Co.

Loaders—Trucks—
Barber-Greene Co.

Long Distance Telephone—
American Telephone & Telegraph Co.

Lubricating Devices—
McCord Radiator & Mfg. Co.

Lubrication—
Ajax Iron Works.
Lunkenheimer Co.

Lubricators—Force Feed—
Hills-McCanna Co.
McCord Radiator & Mfg. Co.
Manzel Brothers Co.

M

Machine Tools—
Ryerson, Jos. T., & Sons, Inc.

Manholes—Tank—
Brooks Engineering Corp.

Manifolds—
Reid, Joseph, Gas Engine Co.

Meters—Gas—
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.
Pittsburgh Meter Co.
Roots, P. H. & F. M., Co.
Westcott & Greis.

Meters—Electric—
Brown Instrument Co.

Meters—Gasoline—
Pittsburgh Meter Co.

Meters—Oil—
Pittsburgh Meter Co.

Molded Goods—Rubber—
Goodyear Tire & Rubber Co.

Motors—Electric—
Fairbanks-Morse & Co.
Westinghouse Electric & Mfg. Co.

Motors—Gasoline (See Engines—Gasoline)—

N

Naphtha—
Pure Oil Co.

Natural Gasoline (See Gasoline—Natural)—

Natural Gasoline Plant Equipment—
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
National Gas Products Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Westcott & Greis.

Nitrogen—
Linde Air Products Co.

Nozzles—Spray—
Power Plant Equipment Co.

O

Oil and Gas Pipe Line Construction—
Hope Engineering & Supply Co.

Oil Burners (See Burners—Oil)—

Oil Field Equipment—
Baker Casing Shoe Co.
Bridgeport Machine Co.
Gaso Pump & Burner Mfg. Co.
International Derrick & Equipment Co.
Iron King Mfg. Co.
Kaw Steel Construction Co.
National Supply Co.
Oil Well Supply Co.
Parkersburg Machine Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Reid, Joseph, Gas Engine Co.
Republic Supply Co.
Simplex Equipment Co.
Trumble Gas Trap Co.

Oil—Fuel—
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil—Gas—
Crown Central Petroleum Corp.
Gulf Refining Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil—Lubricating—
Barnsdall Refining Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Humble Oil & Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Texas Company, The.

Oil—Tractor—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.
Skelly Oil Co.

Oiling Devices—
Lunkenheimer Co.

Oil Meters (See Meters)—

Oil Piping Equipment (See Fittings)—

Oil Reclaiming Process—
Barnickel, Wm. S., & Co.
Houston Pump & Supply Co.

Oil Well Cementing—
Halliburton Oil Well Cementing Co.

Oil Well Tools—
D. & B. Pump & Supply Co.
Hinderliter Tool Co.
Reed Roller Bit Co.
Titusville Forge Co.
U. S. Tool Co.

Over Shots—
Reed Roller Bit Co.
Regan Forge & Engineering Co.

Oxygen—
Linde Air Products Co.

P

Packer Release—
Acme Fishing Tool Co.

Packers—
Goodyear Tire & Rubber Co.
Guiberson Corp.
Larkin & Co.
Layne & Bowler Co.
Meier, E. C., Lubricating Co.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Spang & Co.
United States Rubber Co.

Packing—
Crane Packing Co.
Durabla Mfg. Co.
Garlock Packing Co.
Goodrich, B. F., Rubber Co.
Imperial Belting Co.
Johns-Manville, Inc.

Packing—Metallic—
Crane Packing Co.

Paint Guns—
Binks Spray Equipment Co.

Painting Equipment—Mechanical
Matthews, W. N., Corp.

Paints—
Aluminum Co. of America.
American Asphalt Paint Co.
Arco Company, The.
Cook Paint & Varnish Co.
Detroit Graphite Co.
Dixon, Joseph, Crucible Co.
Du Pont de Nemours, E. I. & Co., Inc.
Eagle-Picher Lead Co.
Eclipse Paint & Mfg. Co.
Hill, Hubbell & Co.
National Lead Co.
Sherwin-Williams Co.
St. Louis Surfacer & Paint Co.

Pipe—Cast Iron—
Greenspon's Jos., Sons Iron & Steel Co.
International Supply Co.
U. S. Cast Iron Pipe & Fdy. Co.

Pipe—Lead Chemical and Antimonial—
Eagle-Picher Lead Co.
National Lead Co.

Pipe—Steel—
Central Tube Co.
Continental Supply Co.
Greenspon's Jos., Sons Iron & Steel Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Murray Tool & Supply Co.
National Supply Co.
National Tube Co.
Republic Iron & Steel Co.
Ryerson, Jos. T., & Sons, Inc.
South Chester Tube Co.
Spang Chalfant & Co., Inc.
Superior Tube Co.
Taubman Supply Corp.
Wheeling Steel Corp.

Pipe—Wrought Iron—
Byers, A. M., Co.
Frick-Reid Supply Co.
Greenspon's Jos., Sons Iron & Steel Co.
Oil Well Supply Co.
Reading Iron Co.
South Chester Tube Co.
Superior Tube Co.
Taubman Supply Corp.

Pipe and Nipple Threading Machines—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Ryerson, Jos. T., & Sons, Inc.

Pipe Clamps (See Clamps—Pipe)—

Pipe Grips—
Larkin & Co.

Pipe Headers—
National Tube Co.
Newton Process Mfg. Co.

Pipe Line Coatings—
Hill, Hubbell & Co.

Pipe Line Construction Tools—
National Transit Pump & Machine Co.

Pipe Line Equipment—
Gaso Pump & Burner Mfg. Co.
Wheatley Bros. Machine Works.

Pipe Screwing Machines—
Buckeye Traction Ditcher Co.

Pipe Straightening Machines—
W-K-M Co., Inc.

Pipe Suspension Device—
Stearns-Roger Mfg. Co.

Pipe Threaders—Power—
Williams Tool Corp.

Pipe Tools—
Armstrong Brothers Tool Co.
Nye Tool & Machine Works.
Ridge Tool Co.
Walworth Co.

Piping—Fabricated—
Midwest Piping & Supply Co.

Piping—Hard Rubber—
United States Rubber Co.

Piping—Steel & Iron—
Crane Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Power Piping Co.

Pistons—
Guiberson Corp.
Heppenstall Forge & Knife Co.

Pistons—Expansion—
Wilson Oil Tools Corp.

Pistons—Slush Pump—
Guiberson Corp.

Plugs—Bottom Water—
Guiberson Corp.

Pre-Heaters—
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.

Preservatives—Asphalt—
American Asphalt Paint Co.

Pulleys—Wood, Iron and Steel—
Continental Supply Co.
Dodge Mfg. Co.

Pulling Machines—
Iron King Mfg. Co.
National Supply Co.
Safety Pulling Machine Co.

Pumpers—Long Stroke—
Farley Machine Co.

Pumping and Pulling Motors—Electric—
Westinghouse Electric & Mfg. Co.

Pumping Equipment—
American Well Works.
Axelson Machine Co.
Byron Jackson Pump Mfg. Co., Inc.
D & B Pump & Supply Co.
Farley Machine Co.
Goulds Pumps, Inc.
Jones, S. M., Co.
Myers, F. E., & Bros. Co.
Northrup Equipment Co.
Oil Well Supply Co.
Prescott Co.
Ratigan, J. P., Co.
Waukesha Motor Co.

Pumping Gear Units—
Nuttall, R. D., & Co.

Pumping Powers—
Bessemer Gas Engine Co.
Buda Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Marion Mch., Fdy. & Supply Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Spence Machine Co.
Titusville Iron Works Co.

Pumps—Boiler Feed—
Ajax Iron Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Gardner Governor Co.
Goulds Pumps, Inc.
Oil Well Supply Co.
Smith Separator Co.

Pumps—Centrifugal—
American Well Works.
Byron Jackson Pump Mfg. Co. Inc.
Fairbanks-Morse & Co.
Goulds Pumps, Inc.
Smith Separator Co.
Worthington Pump & Machinery Corp.

Pumps—Direct Driven—
Bessemer Gas Engine Co.
Smith Separator Co.

Pumps—Electric—
Prescott Co.
Smith Separator Co.

Pumps—Fuel Oil Service—
Blackmer Pump Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Smith Separator Co.

Pumps—Fuel Oil Transfer—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co. Inc.

Pumps—Gasoline and Oil for Filling Stations—
Gilbert & Barker Mfg. Co.

Pumps—Gear Driven—
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
Prescott Co.
Smith Separator Co.

Pumps—Hot Oil—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Goulds Pumps, Inc.
Smith Separator Co.

Pumps—Pipe Line—
Byron Jackson Pump Mfg. Co., Inc.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
National Transit Pump & Machine Co.
Prescott Co.
Wheatley Bros. Machine Works
Worthington Pump & Machinery Corp.

Pumps—Portable—
Gaso Pump & Burner Mfg. Co.

Pumps—Power—
Fairbanks-Morse & Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
Myers, F. E., Bro. & Co.
National Transit Pump & Machine Co.
Prescott Co.
Smith Separator Co.
Waukesha Motor Co.

Pumps—Refinery—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
National Transit Pump & Machine Co.
Northern Fire Apparatus Co.
Smith Separator Co.

Pumps—Rotary—
Blackmer Pump Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Roots, P. H. & F. M., Co.

Pumps—Sand—
Bridgeport Machine Co.
Larkin & Co.
Smith Separator Co.

Pumps—Slush—
Gardner Governor Co.

Pumps—Steam—
Fairbanks-Morse Co.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Prescott Co.
Smith Separator Co.

Pumps—Suction—
Gaso Pump & Burner Mfg. Co.

Pumps—Vacuum—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Gaso Pump & Burner Mfg. Co.
Miller Improved Gas Engine Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.

Pumps—Water—
American Well Works
Byron Jackson Pump Mfg. Co., Inc.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Prescott Co.
Smith Separator Co.

Pyrometers—
Brown Instrument Co.
Republic Flow Meters Co.

R

Ratchet Pipe Cutters—
Toledo Pipe Threading Machine Co.

Ratchet Pipe Threaders—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Ratchet Reamers—
Nye Tool & Machine Works.

Ratchet Stocks and Dies—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Receiving Boxes—
Reid, Joseph, Gas Engine Co.

Recorders—Differential Pressure—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Refinery Equipment—
American Radiator Co.
Blaw-Knox Co.
Braun, C. F., & Co.
Carbondale Machine Co.
Chicago Bridge & Iron Works
Cross Engineering Co.
Graver Corp.
Griscom-Russell Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Appliance Co.
Petroleum Iron Works Co.
Power Piping Co.
Power Specialty Co.
Reid, Joseph, Gas Engine Co.
Ross Heater & Mfg. Co., Inc.
Ross-Meehan Foundries
Smith, A. O., Corp.
Smith Separator Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
United Iron Works, Inc.
Universal Oil Products Co.
Vogt, Henry, Machine Co.
Walsh & Weidner Boiler Co.
Westcott & Greis.
Widdell Engineering Co.

Refractories—Furnace, Stills and Baffles—
National Gas Products Co.

Refrigerating Machinery—
Carbondale Machine Co.
United Iron Works, Inc.
Vogt, Henry, Machine Co.

Regulators—
Fisher Governor Co.
Gilfillan Machine Works
Smith Separator Co.

Regulators—Gas—
Chaplin-Fulton Mfg. Co.
Davis, G. M., Regulator Co.
Equitable Meter & Mfg. Co.
Fisher Governor Co.
Metric Metal Works
National Gas Products Co.
Smith Separator Co.

Rental Service—
Bridgeport Machine Co.

Reversible Clutches—
Bessemer Gas Engine Co.

Rig Irons—
International Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.

Rigs—Drilling, All Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Rigs—Portable Drilling—
National Supply Co.
National Turnbuckle Derrick Co.
Star Drilling Machine Co.

Rod Guides—
Meier, E. C., Lubricating Co.

Rogs—Gauge—
Missouri Woodworking Co.

Rods—Polish—
Jones, S. M., Co.

Rods—Pull—
Axelson Machine Co.
Columbus Sucker Rod Co.
Jones, S. M., Co.
Sheffield Steel Corp.

Rods—Sucker—
Axelson Machine Co.
Columbus Sucker Rod Co.
D & B Pump & Supply Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Sheffield Steel Corp.

Rods—Valve—
Jones, S. M., Co.

Roofing—Asbestos—
Johns-Manville, Inc.

Roofing—Galvanized Iron—
American Rolling Mill Co.

Rope Socket Metal—
Eagle-Picher Lead Co.

Rope—Manila—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Republic Supply Co.

Rope—Wire—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Bridgeport Machine Co.
Broderick & Bascom Rope Co.
International Supply Co.
Jarecki Mfg. Co.
Wickwire-Spencer Steel Corp.
Leschen, A., & Sons. Rope Co.
Williamsport Wire Rope Co.

Rotary Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Rotary Drilling Equipment—
Emsco Derrick & Equipment Co.
Frick-Reid Supply Co.
International Derrick & Equipment Co.
Link-Belt Co.
Lucey Mfg. Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Titusville Iron Works Co.

Rotary Lines (See Rope—Wire)—

Rotary Post—
Reed Roller Bit Co.

Rotary Tool Joints—
Bartlesville Supply Co.
Hughes Tool Co.

Rust Preventatives—
Dearborn Chemical Co.
Eagle-Picher Lead Co.

S

Sand Lines—Manila—
Ajax Rope Co., Inc.
Plymouth Cordage Co.

Sand Lines—Wire—
Ajax Rope Co., Inc.
Broderick & Bascom Rope Co.
Hazard Mfg. Co.
Wickwire-Spencer Steel Corp.

Screens—Oil Well—
Layne & Bowler Co.

Screens—Water Well—
Layne & Bowler Co.

Screws Temper—
Burns Tool Co.

Securities—Oil—
Pforzheimer, Carl H., & Co.

Separators—Centrifugal—
Miller, Max B., & Co.

Separators—Gas and Oil—
Smith Separator Co.

Separators—Steam—
Volz Engineering Equipment Co.

Sheet Lead—Chemical and Antimonial—
Eagle-Picher Lead Co.

Sheets—Corrugated, Black and Galvanized—
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Ryerson, Jos. T., & Son, Inc.
United Alloy Steel Corp.

Sheets—Iron—
American Rolling Mill Co.

Sheets—Steel—
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Sheffield Steel Corp.
United Alloy Steel Corp.

Shingles—Asbestos—
Johns-Manville, Inc.

Siding—Galvanized Iron—
American Rolling Mill Co.

Sleeves—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Sleeves—Split—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Smoke Stacks—
Donovan Boiler Works

Snuffers—Fire—
Simplex Equipment Co.

Sockets—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Spang & Co.

Sockets—Sucker Rod—
Guiberson Corp.

Sockets—Swivel—
Arbon, Paul, & Co.

Sockets—Wire Rope—
Chicago Steel Foundry Co.

Soda Ash—
Mathieson Alkali Works, Inc.

Soda—Caustic—
Mathieson Alkali Works, Inc.

Solders—Bar and Wire—
Eagle-Picher Lead Co.
Hoyt Metal Co.

Spark Plugs—
Mosler Metal Products Corp.

Spears—
Acme Fishing Tool Co.
Brown Tool Co., Inc.

Sprockets—Power Transmission—
Ajax Iron Works
Chain Belt Co.

Stands—Vice—
Nye Tool & Machine Works

Steel—All Kinds—
Ryerson, Jos. T., & Son, Inc.

Steel—Alloy—
Central Steel Co.
Timken Roller Bearing Co.
United Alloy Steel Corp.

Steel—Bit—
Central Steel Co.
United Alloy Steel Corp.

Steel—Hot Rolled Strip—
Central Steel Co.

Steel—Special—
Andrews Steel Co.
Central Steel Co.
United Alloy Steel Corp.

Steel Fabricators—Structural—
Austin Co.
Braden Co.
Graver Corp.
International Derrick & Equipment Co.

Steel Pitmans—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Steel Plate Construction—
Chicago Bridge & Iron Works
Graver Corp.
Kaw Steel Construction Co.
Pennsylvania Engineering Works
Petroleum Iron Works Co.
Vogt, Henry, Machine Co.

Steel Wheels and Tug Rims—
International Derrick & Equipment Co.

Stills—
Blaw-Knox Co.
Graver Corp.
Kaw Steel Construction Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Iron Works Co.
Smith, A. O., Corp.
Vogt, Henry, Machine Co.
Widdell Engineering Co.

Stocks and Dies—
Borden Co.
Nye Tool & Machine Works
Toledo Pipe Threading Machine Co.

Stuffing Boxes—
Axelson Machine Co.
Kansas City Hay Press Co.

Sulphuric Acid—
Eagle-Picher Lead Co.

Superheaters—Steam—
Power Plant Equipment Co.

Swabs—
Arbon, Paul, & Co.
Burt Corporation
Guiberson Corp.
Simplex Equipment Co.

Swedge Nipples—
Dresser, S. R., Mfg. Co.
Harrisburg Pipe & Pipe Bending Co.

Swing Line Equipment—
Brooks Engineering Corp.

Swivels—
Layne & Bowler Co.
Lucey Mfg. Corp.
Titusville Iron Works Co.

T

Tachometers—
Brown Instrument Co.

Tank Equipment—
Brooks Engineering Corp.
Oil Conservation Engineering Co.

Tanks—Bolted—
Butler Mfg. Co.
Columbian Steel Tank Co.
Maloney Tank Mfg. Co.
Parkersburg Rig & Reel Co.

Tanks—Bulk Station—
Butler Mfg. Co.
Graver Corp.

Tanks—Cylindrical—
Graver Corp.
Petroleum Iron Works Co.

Tanks—Elevated Steel—
Chicago Bridge & Iron Works
Graver Corp.

Tanks—Field Storage—
American Car & Foundry Co.
Donovan Boiler Works
Graver Corp.
Kaw Steel Construction Co.
Kewanee Boiler Co.
Maloney Tank Mfg. Co.
Petroleum Iron Works Co.
Pittsburgh-Des Moines Steel Co.
Riter-Conley Co.
United Iron Works, Inc.

Tanks—Horizontal Storage—
Graver Corp.
Kaw Steel Construction Co.
Maloney Tank Mfg. Co.

Tanks—Run Down—
Chicago Bridge & Iron Works
Donovan Boiler Works
Graver Corp.
Kaw Steel Construction Co.
Newton Process Mfg. Co.

Tanks—Steel Storage—
Chicago Bridge & Iron Works

Tanks—Truck—
Butler Mfg. Co.
Columbian Steel Tank Co.
White Co.

Tanks—Underground—
Butler Mfg. Co.
Gilbert & Barker Mfg. Co.
Graver Corp.
Kewanee Boiler Co.
Pittsburgh-Des Moines Steel Co.

Tanks—Welded—
Chicago Bridge & Iron Works
Graver Corp.
Pennsylvania Engineering Works

Taper Taps—
Hughes Tool Co.

Tapes—Measuring for Oil Gauging—
Lufkin Rule Co.
States Engineering Co.

Thermometers—Indicating and Recording—
American Shaeffer & Budenberg Corp.
Bristol Co.
Brown Instrument Co.

Thermometers—Resistance—
Brown Instrument Co.

Threading Machines—
Bignall & Keeler Machine Wks.
Cox & Sons So., The
Landis Machine Co.

Thread Protectors—
Spang & Co.

Tires—Automobile—
Continental Supply Co.

Tires—Pneumatic & Solid—
Kelly-Springfield Tire Co.

Tires—Truck—
Kelly-Springfield Tire Co.

Tongs—
Bridgeport Machine Co.
Wilson Oil Tools Corp.

Tongs—Back Up—
Williams, J. H., & Co.

Tongs—Break Out—
Reed Roller Bit Co.
Williams, J. H., & Co.

Tongs—Casing—
Dunn Mfg. Co.
Guiberson Corp.

Tongs—Chain Pipe—
Armstrong Bros. Tool Co.
Williams, J. H., & Co.

Tongs—Pipe—
National Transit Pump & Machine Co.

Tongs—Rotary—
Dunn Mfg. Co.

Tongs—Tool Joint—
Guiberson Corp.
Hughes Tool Co.
Reed Roller Bit Co.

Tongs—Tubing—
Dunn Mfg. Co.

Tool Chests—Pipe—
Nye Tool & Machine Works

Tool Joints—
Bridgeport Machine Co.
Federal Supply Co.
Hughes Tool Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Regan Forge & Engineering Co.

Torches—
Oxweld Acetylene Co.

Towers—
Graver Corp.

Tractors—
Cleveland Tractor Co.
International Harvester Co. of America.

Trailers—
Spencer Trailer Co.

Transmission Belt—Rubber—
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Transmission Lining—
Stanley Belting Corp.

Traveling Block—
Lucey Mfg. Corp.
Regan Forge & Engineering Co.
Wright Mfg. Co.

Trenchers—Vertical Boom—
Barber-Greene Co.

Trucks—Motor—
Ford Motor Co.
General Motors Truck Co.
Graham Brothers
International Harvester Co. of America
White Co.

Tubes—Boiler, Charcoal Iron—
Byers, A. M., Co.
Reading Iron Co.

Tubes—Boiler Steel—
Continental Supply Co.
National Tube Co.
Ryerson, Jos. T., & Sons, Inc.

Tubing—
Babcock & Wilcox Tube Co.
Byers, A. M., Co.
Central Tube Co.
Continental Supply Co.
National Tube Co.
Pittsburgh Steel Products Co.
Reading Iron Co.
Republic Iron & Steel Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Wheeling Steel Corp.

Tubing Catchers—
Dunn Mfg. Co.
Guiberson Corp.

Tubing Protectors (See Rod Guides)—

Tubular Goods—
Babcock & Wilcox Tube Co.
Central Tube Co.
Continental Supply Co.
Oil Well Supply Co.
Pittsburgh Steel Products Co.
Republic Iron & Steel Co.
Spang, Chalfant & Co., Inc.
Wheeling Steel Corp.

Tubular Goods—Wrought Iron—
Byers, A. M., Co.
Reading Iron Co.

Turbines for Lighting Equipment
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

U

Underreamer Body Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Underreamers—
Bridgeport Machine Co.
Brown Tool Co., Inc.
Guiberson Corp.
Wilson Oil Tools Corp.

Unions—
Central Forging Co.
Dart, E. M., Mfg. Co.
Jefferson Union Co.

V

Valuations—
American Appraisal Co.

Valves—Blow-Off—
Homestead Valve Mfg. Co.
Merco Nordstrom Valve Co.

Valves—Brass & Bronze—
Homestead Valve Mfg. Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Walworth Co.

Valves—Cast Steel—
Chapman Valve Mfg. Co.
Homestead Valve Mfg. Co.
Walworth Co.

Valves—Check—
Gaso Pump & Burner Mfg. Co.
Lunkenheimer Co.
Walworth Co.

Valves—Drop Forged Steel—
Edwards Valve & Mfg. Co.
Vogt, Henry, Machine Co.

Valves—Gate—High and Low Pressure—
Chapman Valve Mfg. Co.
Crane Co.
Darling Valve & Mfg. Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Ludlow Valve Mfg. Co.
Lunkenheimer Co.
Murray Tool & Supply Co.
Powell, Wm., Co.
Walworth Co.

Valves—Iron—
Chapman Valve Mfg. Co.
Lunkenheimer Co.
Merco Nordstrom Valve Co.
Reading Steel Casting Co.
Walworth Co.

Valves—Metal Pump—
Durabla Mfg. Co.

Valves—Pump—
United States Rubber Co.

Valves—Relief—Supersensitive—
Davis, G. M., Regulator Co.

Valves—Steel—
Chapman Valve Mfg. Co.
Edward Valve Mfg. Co.
Kerotest Mfg. Co.
Lunkenheimer Co.
Metric Metal Works
Powell, Wm., Co.
Reading Steel Casting Co.
Walworth Co.

Valves—Tank Vent—
Brooks Engineering Corp.
Oil Conservation Engineering Co.

Valves—Working Barrel—
Atlas Ball Co.
Axelson Machine Co.
D & B Pump & Supply Co.
Hough, Charles N., Mfg. Co.
Northrup Equipment Co.
Oil Well Supply Co.

Varnishes—
Arco Company, The
Detroit Graphite Co.
Sherwin-Williams Co.

Vises—Bench—
Nye Tool & Machine Works

Vises—Pipe—
Nye Tool & Machine Works

Vises—Post—
Nye Tool & Machine Works

W

Wagons—Truss Wheel—
Athey Truss Wheel Co.

Walking Beams—Steel—
Emsco Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Water Cooling Systems—
Power Plant Equipment Co.

Water Softeners and Filters—
Butler Mfg. Co.
Graver Corp.

Wax—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.

Weight Indicators—
Hughes Tool Co.

Welding Accessories—Electric—
Wilson Welder & Metals Co.

Welding and Cutting Apparatus—
Oxweld Acetylene Co.

Welding Machines—Electric—
Wilson Welder & Metals Co.

Welding Supplies—
Oxweld Acetylene Co.

Welding Wire—
Frick-Reid Supply Co.
Oxweld Acetylene Co.
Wilson Welder & Metals Co.

Well Shooting—
Eastern Torpedo Co.
Kinley, M. M.
Zero Hour Torpedo Co.

Wheels—Pipe Cutter—
Nye Tool & Machine Works

Winches—
Braden Co.
Brooks Engineering Co.
Oil Conservation Engineering Co.

Wire Lines (See Cables—Steel)—

Wood Patterns and Models—
Gaso Pump & Burner Mfg. Co.

Working Barrels—
Axelson Machine Co.
D & B Pump & Supply Co.
D. & N. Specialty Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hough, Charles N., Mfg. Co.
McGregor Working Barrel Co.
Norris, W. C.
Northrup Equipment Co.
Oil Well Supply Co.

Wrenches—Closet Spuds—
Nye Tool & Machine Works

Wrenches—Drop Forged—
Williams, J. H., & Co.

Wrenches—Pipe—
Trimont Mfg. Co.
Walworth Co.

Wrenches—Ratchet—
Dresser, S. R., Mfg. Co.
Nye Tool & Machine Works

Z

Zinc Oxide—
Eagle-Picher Lead Co.

Oklahoma-Kansas and Eastern Pipeline Report

PIPELINE STATEMENT FOR JUNE

Oklahoma-Kansas

Runs

*Prairie Pipe Line Co.	3,864,000	128,800
Gulf Pipe Line Co.	1,185,886	39,530
Texas Pipe Line Co.	505,387	16,846
Magnolia Petroleum Co.	1,141,393	38,046
Cosden Pipe Line Co.	821,767	27,392
Empire Pipe Line Co.	724,409	24,147
*Sinclair Pipe Line Co.	1,692,000	56,400
*Other lines	7,080,000	236,000
Total May	17,864,437	676,281
Total June	17,014,842	567,161
Difference	849,595	9,120

Shipments

†Prairie Pipe Line Co.	4,215,416	140,514
Gulf Pipe Line Co.	1,078,312	35,944
The Texas Pipe Line Co.	777 062	25,902
Magnolia Petroleum Co.	1,223,754	40,792
Cosden Pipe Line Co.	798,600	26,620
Empire Pipe Line Co.	828,505	27,616
†Sinclair Pipe Line Co.	2,486,153	82,872
*Other lines	7,950.000	265,000
Total June	19,357,803	645,260
Total May	21,275,280	686,298
Difference	1,917,477	41,038

Stocks

*Prairie Oil & Gas Co.	27,750,000
*Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line Co. and Gypsy Oil Co.	6,398,124
The Texas Company	2,921,098
Magnolia Petroleum Co.	4,533,898
Empire Pipe Line Co.	2,736,142
Cosden Pipe Line Co.	2,055,583
*Sinclair Pipe Line Co.	18,800,000
Carter Oil Co.	12,948,357
*Other lines	9,300,000
Total June	89,443,202
Total May	90,623,771
Difference	1,180,569

*Estimated. †Prairie Pipe Line shipments include also Texas crude oil and Sinclair shipments include also Texas and Wyoming crude oil.

Note:—Stocks do not include approximately 4,800,000 bbls. of crude oil held in storage on private tank farms and leases.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipelines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for June and July.

	June, '26	July, '26
Nat. Transit	169,062.33	163,355.48
S. W. Pa. Pipe	96,302.81	101,686.03
Eureka Pipe	388,529.04	392,989.67
Buckeye P. L. (Macksburg)	317,931.59	306,269.80
Buckeye P. L. (Cleveland)	12,694.00	11,170.47
Buckeye P. L. (Lima, etc.)	139,350.89	137,149.47
Indiana P. L.	11,401.12	10,828.41
Cumberland P. L.	271,131.47	282,211.58
N. Y. Transit	20,964.71	21,334.18
Tidewater P. L.	165,122.06	168,664.93
Pure Oil	171,908.20	176,480.50
Emery P. L.	53,721.55	53,064.83
Indian Ref.	98,207.86	104,990.12
Paragon Dev.	222.32	22,718.44
Pittsburgh P. L.	7,380.66	6,486.24
Total	1,923,930.61	1,959,400.15
Daily average	64,131.02	63,206.46

Note—Indian Refining Co. also reported other receipts of 254,924.52 bbls. Paragon Refining Co. had other receipts of 154,728.15 bbls. Paragon Development had other receipts of 2,162.99 bbls. Pure Oil had other receipts of 72,402.22 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipelines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for June and July:

	June, '26	July, '26
Nat. Transit	309,943.34	370,891.32
S. W. Pa. P. L.	410,424.53	409,458.00
Eureka P. L.	157,187.82	194,592.54
Buckeye P. L. (Macksburg)	143,825.27	154,972.89
Buckeye P. L. (Cleveland)	969.85	1,408.19
Buckeye P. L. (Lima, etc.)	889,104.44	895,654.71
Indiana P. L.	963,293.95	995,699.54
Cumberland P. L.	168,812.76	168,426.65
N. Y. Transit	609,865.71	648,783.66
Northern P. L.	156,433.96	185,783.37
Tidewater P. L.	112,918.87	107,643.02
Pure Oil	251,768.14	238,473.30
Emery P. L.	51,241.24	54,161.96
Paragon Ref.	138,805.17	159,136.74
Indian Ref.	411,634.57	372,128.62
Paragon Dev.	24,375.86	24,942.64
Pittsburgh P. L.	7,111.28	7,169.75
Total	4,807,716.76	4,989,308.90
Daily average	160,257.23	160,945.45

Gross Stocks

The gross stocks held by various pipelines in the oil producing sections of New York Pennsylvania, West Virginia, Ohio, Indiana and Kentucky, at the close of June and July, were as follows:

	June, '26	July, '26
Nat. Transit	1,092,580.36	1,053,770.84
S. W. Pa. P. L.	691,520.32	683,787.99
Eureka P. L.	1,505,989.62	1,483,121.26
Buckeye P. L. (Macksburg)	417,389.77	415,112.82
Buckeye P. L. (Cleveland)	96,462.04	85,333.91
Buckeye P. L. (Lima, etc.)	2,236,314.81	2,428,415.17
Indiana P. L.	656,955.26	676,702.86
Cumberland P. L.	596,899.55	633,819.77
Southern P. L.	364,453.41	476,270.69
N. Y. Transit	902,682.42	822,714.93
Northern P. L.	463,514.79	433,011.92
Pure Oil	439,660.41	450,205.94
Emery P. L.	38,147.78	37,324.53
Paragon Ref.	41,158.98	36,255.80
Indian Ref.	123,370.73	110,400.30
Paragon Dev.	4,340.27	4,313.95
Pittsburgh P. L.	4,483.60	4,124.64
Total	9,585,904.12	9,734,686.53
Increase	54,146.72	148,782.41

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipelines at the close of June and July showing the gross stocks of the above fields:

	June, '26	July, '26
Pennsylvania	3,941,471.18	4,047,418.29
Lima	878,020.72	859,783.19
Kentucky	1,131,573.86	1,249,214.91
Mid-Continent	3,592,023.19	3,502,567.49
Illinois	42,815.17	75,702.65
Total	9,585,904.12	9,734,686.53

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1923	1924	1925	1926
January	75,790	62,638	56,831	55,630
February	71,092	68,023	60,606	60,394
March	76,592	68,721	60,575	61,644
April	75,614	71,058	63,062	63,019
May	77,365	63,942	59,217	60,580
June	77,593	63,230	61,270	64,131
July	71,879	64,208	62,639	63,206
August	76,910	59,942	59,686	.....
September	72,358	62,930	62,510	.....
October	76,256	64,976	60,995	.....
November	70,762	56,282	59,350	.....
December	69,271	55,814	57,974	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1923	1924	1925	1926
January	171,067	145,518	157,889	156,056
February	164,219	148,732	160,863	156,488
March	185,487	147,098	154,591	150,239
April	170,751	147,611	151,429	152,371
May	177,102	134,997	146,995	160,988
June	173,598	143,010	149,467	160,257
July	168,330	124,187	161,338	160,945
August	142,776	123,120	161,730	.....
September	137,266	127,325	156,719	.....
October	134,597	123,170	145,388	.....
November	131,426	124,400	143,582	.....
December	139,909	151,392	150,162	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1924	1925	1926
January	12,907,202	11,353,276	9,859,170
February	11,844,068	11,192,524	9,579,354
March	10,906,752	11,158,297	9,438,292
April	10,922,742	11,062,932	9,805,851
May	11,335,309	11,207,562	9,531,757
June	11,544,204	11,093,796	9,585,904
July	12,062,361	11,067,453	9,734,687
August	172,221,676	10,974,481	.....
September	12,206,836	10,781,753	.....
October	12,664,061	11,086,850	.....
November	12,268,530	11,068,158	.....
December	11,583,680	10,458,445	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above.

	Receipts	Shipmts.	Stocks
1925—			
July	2,639.34	3,174.19	11,556.29
August	3,216.97	1,577.99	13,189.27
September	2,929.99	5,352.05	10,767.21
October	2,869.75	1,499.34	12,137.62
November	2,759.66	2,571.32	12,282.40
December	2,661.87	3,441.67	11,503.60
1926—			
January	2,990.16	1,478.35	13,015.41
February	2,580.23	2,776.19	12,819.45
March	2,754.62	1,732.77	13,841.30
April	3,137.40	4,519.68	12,459.02
May	2,933.29	2,096.35	13,295.96
June	3,217.62	1,655.15	14,858.42
July	3,025.86	4,075.11	13,809.18

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Aug. 1	2,529,844.32
Runs from wells	884,910.04
Other receipts	230,983.04
Regular deliveries	436,288.50
Other deliveries	672,106.54

The amount of Illinois oil run by the Tide Water Pipe Co. in July was 28,580.62 bbls. and deliveries were 53,804.32 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1925—		
July	724,481.26	564,713.19
August	673,652.38	650,649.97
September	706,434.87	510,697.61
October	706,532.00	633,682.32
November	664,556.30	488,449.19
December	665,086.99	578,938.47
1926—		
January	665,243.62	516,083.76
February	632,611.99	506,310.51
March	753,306.74	524,625.95
April	610,957.04	487,604.00
May	682,416.67	498,456.90
June	693,102.34	558,054.94
July	713,490.66	490,092.82

The Tide Water Pipe Co., Ltd., also delivered in July 173,325.78 bbls. of Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: New Orleans Galveston	Port Arthur Baton Rouge	Sabine Pass	Tampa	Total	Total All Ports
March	7,000	2,516	48,839	16,612	16,903	91,870	.....	.....	.....	.....	.....	91,870
April	19,033	5,133	28,333	13,400	22,867	88,767	.....	.....	4,700	.....	.....	93,467
May	27,065	7,903	16,387	13,452	17,742	81,549	.....	.....	4,032	.....	.....	85,571
June	24,533	11,000	22,800	34,467	15,167	107,967	.....	.....	.....	.....	.....	107,967

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: New Orleans Galveston	Port Arthur Baton Rouge	Sabine Pass	Tampa	Total	Total All Ports
March	28,387	15,935	81,742	16,290	34,258	176,612	19,355	44,097	7,096	5,294	75,842	252,454
April	16,200	14,000	76,833	10,633	39,333	156,000	19,200	24,900	2,000	4,433	50,533	206,533
May	12,387	12,258	75,516	11,645	21,548	133,355	12,710	45,226	1,936	5,677	65,549	198,904
June	15,800	10,800	87,300	6,500	21,267	141,667	26,300	42,267	6,567	3,900	78,033	219,700

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
July:	Month	20,411,059	14,263,565	12,337,598	3,686,675	7,835,819	1,898,178	3,129,199	3,348,000	66,910,083
	Daily average	658,421	460,115	397,894	118,925	252,768	61,231	100,942	108,000	2,158,390
August:	Month	21,055,580	14,441,040	11,936,079	3,558,087	7,450,580	1,858,543	3,250,448	3,177,000	66,677,357
	Daily average	677,599	465,480	385,022	114,777	240,341	59,727	104,853	102,484	2,150,883
September:	Month	20,062,763	14,825,040	11,264,890	3,393,270	6,457,950	1,776,570	3,235,625	3,212,000	64,228,108
	Daily average	668,759	494,168	375,496	113,109	215,265	59,219	107,854	107,067	2,140,937
October:	Month	20,015,076	14,921,199	11,196,511	3,477,146	6,409,281	1,871,830	3,294,990	3,248,000	64,534,033
	Daily average	645,648	481,329	361,178	112,166	206,751	60,382	109,500	104,774	2,081,743
November:	Month	19,095,907	14,590,980	10,650,087	3,221,760	5,927,955	1,758,882	3,088,121	2,992,000	61,325,692
	Daily average	636,530	486,366	355,003	107,397	197,599	58,629	102,937	99,753	2,044,190
December:	Month	19,249,711	14,123,848	10,930,455	3,308,816	6,047,883	1,763,966	3,187,164	3,086,900	61,698,743
	Daily average	620,959	455,608	352,595	106,736	195,093	56,902	102,812	99,552	1,990,282
January:	Month	19,069,563	13,674,813	11,049,715	3,250,536	5,489,604	1,726,390	3,136,280	3,014,000	60,410,901
	Daily average	615,147	441,128	356,442	104,856	177,084	55,690	104,396	97,226	1,948,741
February:	Month	17,163,963	12,392,016	9,943,232	2,877,812	4,756,836	1,584,184	2,778,605	2,931,000	54,427,648
	Daily average	612,999	442,572	355,115	102,779	169,887	56,578	99,236	104,678	1,978,844
March:	Month	18,825,786	14,312,886	11,014,238	3,334,887	5,115,337	1,889,663	3,161,250	3,349,000	61,003,547
	Daily average	608,283	461,706	355,298	107,577	165,027	60,957	101,976	108,032	1,957,856
April:	Month	18,091,771	14,468,190	10,799,760	3,330,120	5,127,510	1,959,570	3,231,404	3,183,000	60,191,325
	Daily average	603,059	482,273	359,992	111,004	170,917	65,319	104,239	106,100	2,006,377
May:	Month	18,667,144	14,507,008	11,940,797	3,516,640	5,482,939	2,231,938	3,459,489	3,317,000	63,122,955
	Daily average	602,166	467,968	385,187	113,440	176,879	71,998	111,596	107,000	2,036,224
June:	Month	18,269,417	14,073,510	11,783,550	3,366,450	5,064,760	2,205,480	3,437,905	3,240,000	61,441,072
	Daily average	608,981	469,117	392,785	112,215	168,822	73,516	114,597	108,000	2,048,036
	Total 12 months	229,927,730	170,594,095	134,846,913	40,333,199	71,166,954	22,525,194	38,490,480	38,097,900	745,971,464
	Daily average	630,209	467,381	369,438	110,473	194,978	61,713	105,478	104,378	2,043,767

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XUM

XUM

SMOOTHNESS

SMOOTHNESS is a quality to look for in pump operation, not merely because it soothes the nerves [which is important enough] but mainly because smoothness is an external sign of internal efficiency. Smoothness means absence of friction. It indicates parts in correct relation to one another. It spells long life.

The next time you see a GASO pump in operation, note particularly the small amount of vibration compared to pumps of similar design. It is another reason why so many users who try GASOS once standardize on them for all time.

GASO PUMP & BURNER MFG. CO.
Tulsa, Oklahoma

STEAM PUMPS WITH LONG LIFE INBUILT

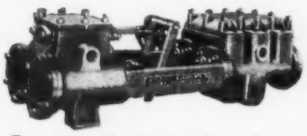


Figure 401—For 175 to 800 pound pressures; a widely used model with an inclination to do the same work as much more expensive types.

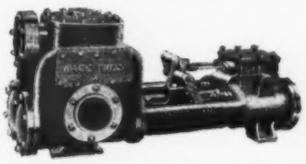


Figure 401-S—An adaptation of Figure 401. Especially suited to refinery uses or wherever else a large capacity, low pressure pump is required.

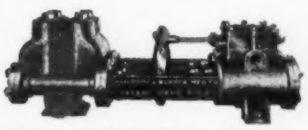


Figure 404—Valve Pot type for 500 to 800 pound pressures. Valve pots accessible from outside. Ideal for high pressure gasoline and acid work.

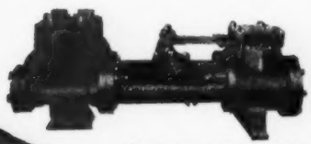
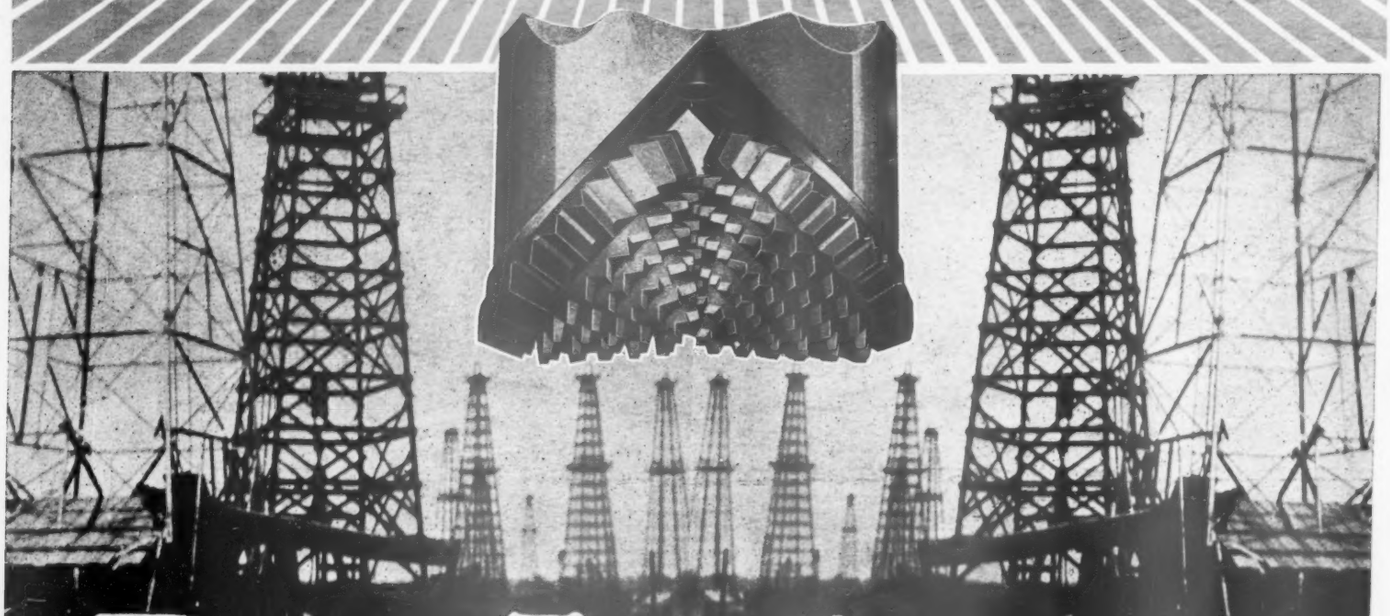


Figure 407—600 to 1,000 pound pressures. A sturdy, large capacity, high pressure steam pump, meeting a large variety of demands. Valve pot type.

GASO PUMPS
for every oil industry need

When there were 51 Rotary Rigs Running
in the
GARBER (OKLA.) FIELD
each and every rig had a minimum
of
2
11-inch
HUGHES ROCK BITS



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OKLAHOMA CITY, OKLA.

MAIN OFFICE AND PLANT
HOUSTON, TEXAS

Export Office
NEW YORK CITY, N.Y.